

REPORT
OF THE
WORKING GROUP ON
VOCATIONALISATION OF
EDUCATION AND WORK
EXPERIENCE



JANUARY 1968



GOVT OF INDIA
PLANNING COMMISSION
NEW DELHI

CONTENTS

| | PAGE |
|---|------|
| 1. Report | 1 |
| 2. Appendix I— A note on "Vocationalisation of Education and Work Experience", together with a summary of the recommendations of the Education Commission, prepared by the Education Division of the Planning Commission. | 9 |
| 3. Appendix II— A note entitled "Providing Work Experience" by Shri T. S. Avinashilingam. | 21 |
| 4. Appendix III— "Notes on Points for Discussion" prepared by Prof. S. K. Bose. | 28 |
| 5. Appendix IV— A note on "Productive Work in Educational Institutions" prepared by the Education Division of the Planning Commission at the time of the Chinese invasion. | 32 |
| 6. Appendix V— A note on "Vocationalisation of Education and Work Experience" by Col. S. G. Pendse, Director of Training, Directorate General of Employment and Training, Ministry of Labour & Employment, New Delhi. | 44 |
| 7. Appendix VI— A note on "Prevocational Training Scheme" by Col. S.G. Pendse, Director of Training, D.G.E.&T., Ministry of Labour & Employment, New Delhi. | 49 |
| 8. Appendix VII— A note on "Project for the Establishment of a Work Experience Centre in Urban Area" by Shri A. S. Lall, Addl. Director, Directorate of Training, Directorate General of Employment & Training, Government of India, New Delhi. | 54 |

THE REPORT OF THE WORKING GROUP ON VOCATIONALISATION OF EDUCATION & WORK EXPERIENCE

Introduction

1.1. The last meeting of the Panel on Education, set up by the Planning Commission, was held on September 26-28, 1966. At the concluding session, the then Member (Education), Dr. V.K.R.V. Rao, announced the appointment of a Working Group to consider the implications of the programme of Vocationalisation of Education and Work Experience.

1.2. The following were appointed as members of the Working Group:

1. Prof. S. K. Bose, Chairman
Director, Indian Institute of
Technology, Powai, Bombay.
2. Shri G. Ramachandran,
Director, Gandhi Gram,
P.O. Gandhigram, Distt. Madurai,
Madras.
3. Shri T. S. Avinashilingam,
Director,
Shri Ramakrishna Mission Vidhyalaya,
Perianaickenpalayan, Distt. Coimbatore.
4. Shri K. Kuruvila Jacob,
Principal,
The Hyderabad Public School,
Begumpet, Hyderabad-16.
5. Shri J. P. Naik,
Adviser, Ministry of Education,
New Delhi.
6. Shri L. S. Chandrakant,
Joint Educational Adviser,
Ministry of Education, New Delhi.

7. Col. S. G. Pendse,
Director of Training,
Directorate General of Employment &
Training, Ministry of Labour &
Employment, New Delhi.
8. Dr. (Smt.) Durgabai Deshmukh,
India International Centre,
40-Lodi Estate, New Delhi.
9. Dr. P. K. Kelkar,
Director, Indian Institute of
Technology, Kanpur.
10. Shri A. H. Hemrajani, Secretary
Director (Education),
Planning Commission, New Delhi.

1.3. The Group held two meetings in Yojana Bhavan, New Delhi on 20-11-1966 and 30-10-1967. Shri L. S. Chandrakant, Dr. (Smt.) Durgabai Deshmukh and Dr. P. K. Kelkar could not attend either of the two meetings. S/Shri G. Ramachandran, T.S. Avinashilingam and J. P. Naik were present only at the first meeting. The other members attended both the meetings. Dr. A. C. Joshi, Shri D. P. Nayar and Shri R. S. Uppal of the Education Division of the Planning Commission attended the first meeting. Shri D. P. Nayar also attended the second meeting.

1.4. The following attended as special invitees:

First Meeting

1. Shri Veda Prakasha, Dy. Educational Adviser,
Ministry of Education, New Delhi.
2. Col. P. Dayal, Director (Plg. & Coord),
N.C.C. Directorate General,
Ministry of Defence, New Delhi.
3. Shri I. J. Patel,
Vice-Chancellor, Sardar Patel University,
Vallabh Vidyanagar, (Gujarat).
4. Shri Radhakrishna, Secretary,
Serva Seva Sangh, Varanasi.
5. Km. Kamala Tyabji,
Dil Pari, Warden Road, Bombay.

Second Meeting

1. Shri A. S. Lall

Directorate of Training, Directorate
General of Employment and Training
Shram Shakti Bhavan, New Delhi-1.

2. Shri K. C. Jaitly

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1.5. The following documents and publications were placed before the Working Group for its consideration :

1. A note on "Vocationalisation of Education and Work Experience", together with a summary of the recommendations of the Education Commission, prepared by the Education Division of the Planning Commission.
2. A note entitled "Providing Work Experience" by Shri T. S. Avinashilingam.
3. "Notes on Points for Discussion" prepared by Prof. S. K. Bose.
4. A note on "Productive Work in Educational Institutions" prepared by the Education Division of the Planning Commission at the time of Chinese invasion.
5. A note on "Vocationalisation of Education and Work Experience" by Col. S. G. Pendse, Director of Training, Directorate General of Employment and Training, Ministry of Labour & Employment, New Delhi.
6. A note on "Prevocational Training Scheme" by Col. S. G. Pendse, Director of Training, D.G.E. & T., Ministry of Labour & Employment, New Delhi.
7. A note on "Project for the Establishment of a Work Experience Centre in Urban Area" by Shri A. S. Lall, Addl. Director, Directorate of Training, Directorate General of Employment & Training, Government of India, New Delhi.
8. A note on "The Introduction of Elementary Workshop Practice as an Activity under Work Experience (Classes V to X)" prepared by the Central Science Workshop, N.C.E.R.T.
9. Report of the Assessment Committee on Basic Education (Ministry of Education, New Delhi).

10. A revised syllabus for the Training of Teachers (Hindustani Talimi Sangh).
11. Syllabus of 8-year Basic Schools in Hindi (Hindustani Talimi Sangh).
12. Work Experience in Hindi (Directorate of Education, Rajasthan).
13. Comments on the recommendations of the Kothari Commission relating to Work Experience.
14. Copy of letter No. SI(Sc.2) 1991/67, dated 18-4-67 received from the Director of Public Instruction, Kerala, regarding the scheme: "Tools Programme" formulated by Shri K. C. Chacko, Principal, College of Engineering, Trivandrum.

Concept of Work Experience

2.1. After considering the recommendations of the Kothari Commission on the subject and the ideas underlying the teaching of craft in the basic system of education, the Group recommended that work experience in schools should include: (a) the practice of clean and healthy living, (b) the learning of elementary skills needed in every day life by the use of simple tools, leading to productive work, and (c) participation in socially useful activities in the school and in the community. The Group was of the view that work experience should be considered as a natural part of general education and should aim mainly at inculcating the habits of enquiry, careful observation and experimentation and developing the quality of self-reliance and the right attitude towards manual labour. The Group felt that these objectives could be achieved if work was done intelligently and not mechanically and was intimately related to the entire educational process. The Group also recommended that work in schools should be related to the environment of the pupil and the materials used should be such as are easily available locally. It was felt that work experience should be organised in a simple way without going in for elaborate and expensive equipment.

CONTENT OF WORK EXPERIENCE

3.1 Primary Stage (Classes I-V)

The Group agreed with the recommendations of the Education Commission that work experience at this stage should take the form of simple hand work. The Group also suggested that

while teachers should be encouraged and given guidance for correlation of these activities with lessons in science and arithmetic, artificial and forced correlation should be avoided.

3.2 Middle School Stage (Classes VI-VIII)

The Group recommended that the following elementary skills should be imparted to all pupils:

- (a) Simple wood work.
- (b) Simple sheet metal work including soldering and brazing.
- (c) Simple electrical and electronic circuitry.
- (d) Very simple metal cutting and metal working without the use of machine tools.
- (e) Simple building craft.
- (f) Gardening.
- (g) Simple cutting and sewing by hand (for girls).
- (h) Knitting and darning (for girls).

The Group stressed that work experience should take the form of projects leading (a) to the acquisition of proper attitudes, and knowledge underlying life activities, (b) to the learning of manipulative skills, and (c) to the production of useful articles. The Group considered it necessary to emphasise that the object of work experience at this stage should not be to turn the pupil into a skilled worker. Apart from imparting the skills already indicated, the Group recommended that every encouragement should be given to schools to teach crafts such as cane and bamboo work, pottery, leather-work, needle work, spinning and weaving etc. In addition, opportunities should be provided for productive work such as poultry-farming, fruit-canning, bee-keeping etc. The Group suggested that six hours, divided in 3 periods of 2 hours each, should be provided every week in the school time-table for work experience.

Lower Secondary Stage (Classes IX & X)

3.31. The Group was of the view that the aim at this stage should be to impart one or two skills in a more intensive manner in a workshop which may be set up in the school or in a central workshop which may cater to the needs of a group of schools in a compact area. The Group emphasised that all such work must be production oriented. The Group also recommended that steps should be taken to set up such workshops

on a pilot basis. However, since it would take a long time to provide workshop facilities for all pupils at this stage, the Group suggested that, in the interim period, the pupils should be engaged in assisting in other forms of productive work or in socially useful activities as a part of community development programme in the area. Community activities e.g. cleaning of the schools campus and the like were also recommended. The Group also recommended that instead of organising work experience for a few hours each week, it would be more advantageous, at this stage, to release batches of students to participate in programmes of work experience for a continuous period of about one month during a year.

3.32. In order to emphasise the importance of productive work in the educational requirement of a school student, the Working Group agreed to the suggestion that the School Leaving Certificate at the end of Standard X might be given in two parts. The first part dealing with academic attainment and the second part in respect of the skill of work attained. The two parts should be completed simultaneously or separately. Unless both the parts are successfully completed, the student should not be qualified for entry to standard XI or to a course of university study. In this way, it would be possible to give the necessary importance to the attaining of productive skill during this stage of school education.

3.4. Higher Secondary Stage (Classes XI & XII)

The Group felt that there were difficulties in introducing work experience at this stage, for the present, because; (a) the setting up of higher secondary schools, as envisaged by the Education Commission, was still under debate and may not be effective in the coming three or four years, and (b) the success of work experience at this stage would depend on the skills acquired at the lower secondary stage, where a beginning is yet to be made. In view of these considerations, it was agreed that, for the present, work experience at this stage should be limited to work on the school campus, community activities and social and national services.

UTILISATION OF EXISTING FACILITIES

4.1 The Group laid great stress on the maximum utilisation of existing facilities for organising work experience programme. Such facilities existed in basic schools, senior basic schools, post-basic schools, multipurpose schools, technical high schools, junior technical schools etc.

TRAINING OF TEACHERS

5.1. *Primary Stage*

The Group felt that training in handicrafts should be a part of the normal training programme in the case of primary teachers. Wherever necessary, facilities for such training should be strengthened.

5.2 *Middle stage*

The Group recommended that teachers already employed in these classes should be encouraged to teach elementary skills at this stage. Those who volunteer for this purpose should be given a course of about 6 months' duration in the Central Training Institutes for Craft Teachers or in the Industrial Training Institutes or in the Regional Colleges of Education. On completion of their training, these teachers should be given a suitable allowance in addition to their normal salaries. Wherever necessary, master craftsmen may be engaged on a part-time basis to assist the school teachers.

5.3 *Lower Secondary Stage*

At this stage, there should be a specialised teacher for each skill and every school should make provision for the teaching of at least two skills. These teachers should have received regular training as craft instructors in a C.T.I. or in a Regional College of Education or in a similar institution.

PILOT PROJECTS

6.1 The Group recommended that to begin with work experience should be introduced in all primary and middle schools. In the second phase, secondary schools of long standing and good reputation should be selected for introduction of work experience. Central workshops should be set up in large industrial centres. The Group suggested that the Central Government should bear, for a period of five years, the entire cost of pilot projects which should include: (a) the setting up in each State of a small number of central workshops, and (b) introduction of work experience in a limited number of schools in each State. The Group also suggested that each State should appoint an officer of the rank of Deputy Director of Technical Education to be in overall charge of the programme.

VOCATIONALISATION OF EDUCATION

7.1 The Group agreed generally with the recommendations of the Kothari Commission regarding imparting of vocational

training to those who leave the general school system at the end of classes VII/VIII & X. This training was to be imparted mainly in the technical, high schools, junior technical schools, I.T.Is. and polytechnics. To assist the students to choose the right type of vocational courses, the schools should develop efficient vocational guidance services. The Group was of the opinion that the days of unskilled labour were numbered and, therefore, unskilled workers of all kinds should be given opportunities to acquire skills. Those who possessed some skills should be assisted to improve their skills. Thus, there should be a nation-wide movement for the acquisition and upgrading of skills of all workers in the country. The Group agreed with the Kothari Commission that a large number of part-time courses, evening courses, sandwich courses etc. should be provided to raise the skills of all categories of workers and producers in the country.



PLANNING COMMISSION

(Education Division)

SUBJECT: *Vocationalisation of Education and Work Experience.*

The system of education in this country has, in spite of various attempts made in the past, remained largely bookish and literary. All educationists are agreed on the need for introducing work experience at all stages in schools. As the Education Commission have pointed out work experience can be an effective educational tool, can inculcate among pupils the habit of hard and responsible work, can lead to better social cohesion, and can increase national productivity. Also, with growing unemployment among the educated youth of the country, it has become imperative to divert, at appropriate stages, a large number of pupils to courses of a vocational character. How to introduce these changes in the educational system poses a challenge to the foresight and ability of educational planners and administrators in the country. Happily, the Education Commission have provided us with valuable guidance which should help in the evolution of a realistic policy.

PRESENT POSITION:

2. It may be useful to examine briefly the outcome of efforts made in the past to introduce the teaching of craft, agriculture and other practical subjects in schools. At the elementary stage, the biggest experiment made on a nation-wide scale was that of basic education. After a promising start, the enthusiasm for basic education steadily waned and although the number of basic schools runs into thousands, these schools are, with a few notable exceptions, not very different from the other elementary schools. Later, when it was realized that it might not be possible to convert all schools to the basic pattern, a programme was launched for the orientation of all elementary schools to the basic pattern by introducing in them some of the salient features of basic education. Even this limited effort has not met with the desired success. Now although the basic education system is intrinsically sound, it could not make much headway mainly on account of lack of adequate preparation, inadequately trained teachers, dearth of teachers' guide books, insufficient equipment and above all an ill-informed and consequently unsympathetic administration.

3. At the secondary stage, the Mudaliar Commission suggested the teaching of craft as one of the core subjects in secondary classes. In addition, the Commission suggested the setting up of multipurpose schools with provision for teaching, in addition to the core subjects, one of the several groups of subjects, viz. Humanities, Science, Agriculture, Commerce, Technical Subjects, Fine Arts and Home Science. Over 3,000 such schools have been set up. Here again the experience, by and large, in respect of the teaching of practical subjects, has been far from happy. The schools are, in many cases, not properly staffed and equipped. The most serious defect, however, in the curriculum for these schools was that they did not provide adequate training either for entry to universities or to vocations.

4. Apart from the multipurpose schools, we have in the country technical high schools (mainly in the States of Maharashtra and Gujarat) and also junior technical schools. These schools impart, in addition to general education, technical education in classes IX-XI. The training given in these schools is, however, not of a terminal character and the majority of the products of these schools join polytechnics and general and professional courses in the universities. There are also about 50 post-basic schools imparting training in agriculture and rural crafts in addition to teaching general education subjects.

5. Mention may also be made of the craftsman training programmes in the Industrial Training Institutes run by the Ministry of Labour & Employment. These training programmes are designed mainly with a view to meeting the demands of industry for skilled workers.

6. The Education Commission have made detailed recommendations in regard to both work experience and vocationalisation of education. These are given in the Annexure. For detailed discussion of these concepts, attention is invited to chapters I, VII, VIII, XIV and XV. These recommendations have been examined in the following paragraphs.

7. Work experience in the lower primary classes (I-IV/V).

(i) The Commission have recommended that work experience in these classes should take the form of simple hand-work. The activities suggested are: paper cutting, cardboard work, clay modelling, spinning (where natural in the environment), simple needle work, simple planting indoors or on plots and kitchen gardening.

(ii) This recommendation would be generally acceptable to everybody concerned with the education of children in primary

classes. Teachers should be encouraged and given guidance regarding correlation of these activities with lessons in science and arithmetic. But artificial and forced correlation should be avoided.

(iii) For effective implementation of this programme, the following action is suggested:

- (a) the teaching of handwork in teacher training institutions should be strengthened. Most of the training institutions are now organised on the 'basic' pattern and have facilities for teaching one or two crafts. Effort should be made to strengthen the teaching. Norms should be laid down in respect of teaching staff, equipment, hours of work etc. The syllabi in this subject should be reviewed and the attainment expected of teacher-pupils should be laid down.
- (b) Arrangements should be made for short-term and in-service training courses for teachers.
- (c) Present syllabi in handwork in primary classes should be reviewed. A standard list of tools and materials to be supplied to schools in each of the activities should be drawn up. The present arrangements for supply of tools and material should be reviewed.
- (d) Since there are already facilities for the teaching of craft in a large number of basic schools, every effort should be made to strengthen the teaching of craft in these schools.
- (e) The State Institutes of Education should be associated closely with this work.

8. *Work experience in the higher primary classes (IV/V-VII/VIII).*

At this stage, according to the Education Commission, work experience should be the form of learning a craft. The crafts recommended are: cane and bamboo work, leatherwork, pottery, needlework, weaving, gardening, model making, fretwork and work on farms.

(ii) The Commission have pointed out that at this stage it would be necessary to have specially trained teachers. It is suggested that State Governments may review the position regarding training of craft teachers in their States. It may be a good idea to have a combined two-year art and craft teachers' course for teachers working at this stage.

(iii) At this stage also, there are a number of senior basic schools, where facilities for craft teaching already exist. Before

embarking on any large-scale programme, it would be worthwhile to improve the teaching of craft in senior basic schools and other schools having similar facilities.

(iv) Here again the State Institutes of Education will have to undertake revision of curricula in schools, draw lists of equipment and materials, suggest procedure for supplying of tools, materials etc.

9. *Work experience in lower secondary classes (VII/VIII-X).*

(i) Work experience at this stage, according to the Commission, should be productive and should be provided in real life situations. A large number of trades have been suggested at p. 219 of the Commission's report. It has also been suggested that work experience at this stage should take the form of workshop training. Accordingly, it has been suggested that a workshop should be attached to every school or a group of secondary schools in a phased manner over the next ten years.

(ii) As mentioned earlier, there are already various types of institutions, multipurpose schools, technical high schools, junior technical schools and post-basic schools which are imparting training in practical subjects. A large number of other secondary schools have facilities for teaching home science, agriculture etc. In the first instance, the resources of these institutions should be utilised to introduce work experience. A phased programme will have to be worked out to cover gradually all schools.

(iii) Teachers at this stage can be recruited mainly from skilled craftsmen trained by the I.T.Is., diploma holders in agriculture etc. The Regional Colleges of Education of N.C.E.R.T. have also started courses for teachers of industrial arts.

(iv) Suitable syllabi will have to be worked out keeping in view the fact that work experience will be one of the subjects taught at this stage, others being: three languages, mathematics, science, history, geography and civics, art, social service, physical education and education in moral and spiritual values.

(v) The State Boards of Secondary Education will prepare syllabi, lists of equipment, and lay down qualifications of teachers and other conditions for the efficient teaching of the subject. They will also lay down methods of evaluation. Estimates of cost etc. will have to be prepared. On the basis of this, the State Departments of Education will draw a phased programme of implementation.

10. *Work experience in higher secondary classes (XI-XII)*

(i) The Commission have stated that many of the activities at the lower secondary stage would be continued at this stage but the emphasis would shift to workshop practice or actual work experience in industrial and commercial concerns or on farms. The activities would be oriented towards productive works. The skills expected would be of a higher and more exacting nature.

(ii) It is suggested that introduction of work experience at this stage may be postponed to the Fifth Plan because :

- (a) the setting up of higher secondary schools as envisaged by the Commission is still under debate and may not be effective during this Plan, and
- (b) the success of work experience at this stage will depend on the skills required at the lower secondary stage, where a beginning is yet to be made.
Meanwhile, it is suggested that work experience at the stage should be combined with the programme if social service.

11. *Vocationalisation at the lower secondary stage.*

(i) Most of the students wishing to take vocational courses will join the ITIs. The Commission have recommended that the age of admission to the ITIs may be reduced to 14. It has also been suggested that courses in ITIs should provide some general education. It should be possible to implement these suggestions. In fact, ITIs have introduced the teaching of applied science and mathematics. But the expansion of facilities in the ITIs will depend entirely on the capacity of industry to absorb the craftsmen trained by the Institutes, unless we can reorient our training towards self employment. Also it costs more than Rs. 1,000/- per annum to train a student in an ITI. Therefore, unless employment is more or less assured to their products, it would be futile to increase the intake capacity of ITIs. We may take it that the Ministry of Labour and Employment will take care of this aspect of the question.

(ii) The Commission have recommended that both technical high schools and junior technical schools should be unmistakably designed as schools for the training of skilled workers. In a foot note on p. 372 of the Report, it has been suggested that technical high schools in Maharashtra and Gujarat may continue to

experiment with general technical course as well. It is suggested that the role of these institutions both for imparting general technical education and for imparting vocational education, some what distinct from that given in the ITIs, should be carefully defined.

(iii) The Commission have not made any suggestions with regard to the future of multipurpose schools. It is suggested that the technical streams of these schools should be organised on the lines of the junior technical schools. Whether other streams should be reorganised to impart terminal courses is a matter for consideration.

(iv) Part-time courses suggested by the Commission will have to be arranged mainly in the ITIs.

12. Vocationalisation at the higher secondary stage.

(i) This will be an important stage to divert students to vocational courses. The ITIs, the polytechnics—engineering and agricultural—and the various training institutions set up by Ministries of Agriculture, Health, Industry, etc. to train middle-level workers in their respective fields, will cater to the needs of the students at this stage and provide full-time, part-time and other kinds of vocational courses.

(ii) The State Education Departments are expected to assist this programme by setting up an effective vocational guidance service. The State Bureaux of Educational and Vocational Guidance may be given this responsibility. The career masters and guidance counsellors in schools will provide the necessary guidance.

13. Organisational set up for implementing the programme.

(i) It is suggested that there should be at the centre a high level co-ordinating committee consisting of representatives of Ministries of Education, Agriculture, Health, Labour and Employment, Planning Commission, N.C.E.R.T. and of some States. The committee should review the progress of work-experience and vocationalisation of education from time to time and give guidance on all questions of national policy.

(ii) Similar co-ordination committees should be set up in each State. In addition, as suggested by the Commission, there should be special sections in the State Education Departments to deal with all problems of work-experience and vocationalisation of education. The State Institutes of Education and the State Boards of Education should be fully associated.

(iii) At the district level, there should be a Deputy Inspector who should be qualified to inspect and advise schools in regard to programmes of work-experience.

14. (i) In the Draft Fourth Plan (1966-1971) the following provisions have been made:—

1. Elementary Education

- | | |
|--|---------------|
| (a) Strengthening of Basic Schools | Rs. 6 crores |
| (b) Work orientation in middle schools | Rs. 10 crores |

2. Secondary Education

- | | |
|--|---------------|
| (a) Vocational education at the secondary stage including multipurpose schools, Junior Agricultural Schools. | Rs. 24 crores |
| (b) Junior Technical Schools | Rs. 6 crores |

In addition, separate provisions have been made for the training of craftsmen, middle-level health personnel etc.

(ii) It is necessary to give guidance to States regarding the utilisation of these funds. The following suggestions are made:—

- (a) The State Governments should take immediate steps to prepare syllabi, lists of equipments etc. as suggested in this note.
- (b) When this preparatory work is completed, institutions like basic schools, senior basic schools, post-basic schools, multipurpose schools etc. should be taken up for intensive development of programmes of work experience. In the light of experience so gained the State may draw phased plans of introducing the programme in all schools.
- (c) States may also consider what consultative, administrative and inspecting machinery would be required to implement the programme of work experience and vocationalisation of education.
- (d) States should also consider what changes, if any, should be made in the present teacher training programmes and what administrative arrangements should be made for supply of equipment, tools, material etc.
- (e) States may also consider what public support can be gained for this programme.

ANNEXURE I

RECOMMENDATIONS OF EDUCATION COMMISSION

1. *Work Experience—its concept*

(i) Work experience should be introduced as an integral part of all education. It should involve participation in some form of productive work under conditions approximating to those found in real life situation.

(ii) In the lower classes of the primary school, work experience may begin as simple handwork. In the senior classes, it may take the form of learning a craft. Work experience at the lower secondary stage can take the form of workshop training. At the higher secondary stage, work experience should be made available in school workshop and also on farms and in industrial or commercial establishments.

(iii) The range of possible activities that can be provided in a programme of work experience is very wide and the choice will be determined mainly by the availability of materials and trained instructors. (A suggestive list is given at p. 210 of the Report. A brief note on the general programmes of work experience in USSR is given at pages 211-216 of the Report).

(iv) The concept of work experience is closely related to the philosophy of basic education. What is needed is a reorientation of the basic education programme to the needs of a society that has to be transformed with the help of science and technology. In other words, work experience must be forward looking in keeping with the character of the new social order.

(v) While productive work experience in rural areas should be largely built round agriculture, programmes oriented to industry and simple technology should be introduced in a fair proportion of rural schools. In schools where workshop cannot be provided, suitable kits of tools and materials may be manufactured at low cost and made available to the pupils. Gardening should be introduced in as many rural schools as possible.

(vi) It should be the declared object of the State policy to increase the facilities for work experience in industry and agriculture as rapidly as possible and to make them available to schools for the education of the rising generation. While in the transitional stage, the majority of the children will receive experience in the traditional programme of production which the

community practices, a continuous attempt should be made to bring in science and technology and to introduce the pupils to better ways of performing these traditional tasks.

2. *Work experience—its implementation*

The Education Commission have made recommendations for implementation of the programme of work experience under three heads: (i) training of teachers, (ii) provision of necessary facilities including supply of equipment and (iii) progressive extension of the programme to all schools. The details of recommendations are as under:—

(1) *Training of Teachers*

- (i) It would be necessary to have specially trained teachers for the higher primary and secondary schools and special institutions for the purpose may have to be set up.
- (ii) While efforts should be made to obtain services of properly trained teachers, it should be possible to utilise the services of skilled craftsmen or graduates of vocational schools who are given a short course of training as teachers.

(2) *Facilities and Equipment*

- (i) In rural areas farms should be attached to schools wherever possible. Where it is not possible arrangements should be made to provide work experience on private farms with the assistance of the local people.
- (ii) Facilities for industry oriented experience should be provided in all big schools. All secondary schools whether urban or rural should be provided with workshops.
- (iii) A programme for the design and manufacture of cheap kits for schools and other materials should be taken up with the help of industrial concerns. ITIs, polytechnics and vocational schools can also manufacture tools and simple equipment of standardised designs.

(3) *Development of the programme*

- (i) A great deal of spade work will have to be done before the scheme is launched. It will included preparation of the necessary literature about the scheme and its introduction to teachers and students. Short orientation

courses will have to be held for officers of the Department, principals and headmasters. The training of teachers under the programme will have to be undertaken in advance.

- (ii) A phased programme of implementation will have to be prepared. A beginning may be made in 1967-68 with not less than 1% of all educational institutions on each stage of education and this number should rise to 20% by the end of the Fourth Plan. All institutions should be covered by the end of the Fifth Plan.

3. *Vocationalisation—its concept*

(i) Too sharp a distinction must not be drawn between general and technical education. General education should introduce children to the world of work and to an understanding of science and technology. While all general education, should contain some technical education of a pre-vocational nature, technical education should contain an appropriate element of general education.

(ii) At the lower secondary stage (classes VIII/IX-X) the enrolment in vocational courses should rise to about 20% of the total enrolment in these classes by the year 1986. The corresponding percentage of enrolment at the end of the Third Plan was 2.2.

(iii) At the higher secondary stages (Classes XI-XII) enrolment in vocational courses should be raised to 50% of the total enrolment.

4. *Vocationalisation—its implementation*

(1) *Lower Secondary Stage*

- (i) In the Industrial Training Institutions, there are courses which are open to those who have completed the primary school. If the age of admission to this course is reduced to 14—this was originally 16 and now reduced to 15—a large number of students who complete the primary school will be able to enter these courses of industrial training.
- (ii) Technical high schools and junior technical schools should prepare students for jobs in industry. The courses offered should be clearly terminal and adjusted through

the greater use of available time to meet the requirements of the Apprenticeship Act and should lead to trade certificates. The length of courses may vary from course to course with a strong emphasis on experimental work and applied science in all the schools. A number of these schools should be selected for development as quality institutions.

- (iii) A large number of students who drop out after class VII or class VIII will enter employment in family business, some with the idea of setting up their own small scale industry or trade. A wide range of courses should be available on a part-time basis for them to obtain qualification or to up-grade their skills. (Examples of such courses are given in Annexure to chapters XIV and XV). The Education Department should set up special sections to help such persons.
- (iv) A large proportion of the rural boys will join the family farm. They will have to be provided with further education which will enable them to improve their professional efficiency and general education.
- (v) A large number of girls will leave schools and get married either immediately or a little later. They should be given further education in home science combined with general education.

(2) *Higher Secondary Stage*

At this stage the Commission have recommended the following types of vocational courses:

- (i) Courses in agricultural and engineering polytechnics including part-time vocational courses in industry arranged on either day-release, sandwich or correspondence course basis.
- (ii) Short condensed courses for up-grading skills of those who have entered into employment or the retraining and re-education of those already qualified. These courses should be organised in agricultural and engineering polytechnics.
- (iii) A large number of courses offered in Industrial Training Institutes require the completion of class X as a qualification for entry. These courses should be expanded rapidly.

- (iv) In addition, a wide range of other courses in health, commerce, administration, small scale industries and the services should be developed ranging in duration from 6 months to 3 years for a certificate or diploma qualification. These can also be offered on a part-time basis or through correspondence for those already in employment. Lists of such courses are given at the end of chapters XIV and XV of the Commission's Report.
- (v) The State Departments of Education should create special sections for the overall organisation of courses of this nature whether full-time or part-time. In organising such programmes the manpower needs should be taken into consideration and there should be close collaboration with the machinery for vocational guidance and with industry and employers generally.

(3) The other recommendations made by the Commission regarding vocationalisation at the higher secondary stage are as follows:—

- (i) The Central Government should provide special grants to State Governments in the centrally sponsored sector for programmes of vocationalisation for secondary education.
- (ii) Effective vocational guidance programmes should be organised at district and State levels. The vocational courses at the school stage should be predominantly terminal in character. However, there should be opportunities for exceptionally gifted pupils, through further study, to rejoin the main stream and move higher.
- (iii) The courses for the training of technicians should be revised in the light of periodic investigations to be carried out in co-operation with industry.
- (iv) Diploma training should be more practical by including industrial experience. (The Commission have made several recommendations in regard to re-organisation of courses in the polytechnics).
- (v) Attempts to train for vocational competence in farming through formal schooling in agriculture at primary and lower secondary levels have failed and further efforts should be held in abeyance.

PROVIDING WORK EXPERIENCE

by

SHRI T. S. AVINASHILINGAM

The need for providing work experience in our educational system in all its stages has been greatly emphasised in the report of the Education Commission published recently. That our education is predominantly academic and lacks touch with life is not a new finding. The introduction of practical subjects in secondary schools so as to divert them into different walks of life was recommended as early as 1882. In spite of the introduction of what has been called multipurpose courses about a decade back, the enrolment in the vocational courses at the secondary stage seems to be only 9% of the total enrolment which as the Commission has observed is the lowest in the world. This is against nearly 70% in countries like Russia and Japan. In 1917, the Calcutta University Commission found that the great majority of students in the University 22,000 out of 26,000 pursued purely literary courses and sought work on lower administrative, clerical and teaching posts. After nearly half a century the picture does not seem to have improved much; only 23% of the total enrolment in Universities is in professional courses at present, with the result, most of the college graduates are not trained to any fruitful avocation, and therefore, find difficulty in getting employment and consequently lead frustrated lives.

Apart from leading to professional courses, provision of work experience in schools is an essential and sound educational proposition. A study of the educational systems in the world will show that in all backward and poor communities, there is an antithesis between education and work, while in all progressive and economically well-to-do countries work is integrated with education. Therefore, the need to provide for an element of work in our educational system has been well recognised. As the Secondary Education Commission said: 'We consider it necessary that, at this (school) stage, every student should devote some time to work with the hands and attain a reasonably high standard of proficiency in one particular craft, so that, if necessary, he may support himself by pursuing it'. But it is not on economic grounds only that we make this recommendation. By working with his hands the adolescent learns the dignity of labour

and experiences the joy of doing constructive work. There is no greater educative medium than making with efficiency and integrity the things of utility and beauty. It trains practical attitudes, facilitates clarity of thinking, gives chances of co-operative work and thus enriches the entire personality.

There is another aspect of the influence of work. It trains people not only in skills, but also in good character. The saying that character is forged on the anvil of action is very true indeed. As Dr. Zakir Hussain observed once in the Sri Avinashilingam Home Science College, 'while scholarship grows in solitude, character grows in company'. High schools where activities and work are organised on the basis of efficiency, integrity and discipline tend to develop good character. In the same way if work is organised in a slipshod, haphazard manner, such work trains people only in indiscipline and want of character. Therefore, it is not merely the introduction of work in our schools that is important, but the manner in which it is done, is most important.

Even before the Secondary Education Commission, Mahatma Gandhi, the Father of the Nation, who by experience and instinct could find the root causes of our downfall and slavery, emphasised the need for a constructive craft to become part of our school life. Basic education is his lasting and final contribution to the nation. He wanted dignity of work to be instilled in the children even from the very first years. He further said that this work must be based on the needs of the pupils and the community. The needs of the pupils for good living and personal well-being are, cultivation of habits for healthy living, such as washing and cleaning the body and the clothes, keeping the surroundings clean, i.e. environmental hygiene and a constructive craft. He wanted that the syllabus and curriculum of the school should be built on those experiences. Psychologically that system of education was unassailable. It was accepted by all the State Governments and the Government of India. But still we are sorry to note that the basic schools were not a national success, though we have some very good basic schools in some places. When the Education Commission recommends work experience in schools, it is necessary for us to examine the reasons why it failed. Such an examination will greatly help when we want to implement this important recommendation of the Commission.

The main reasons for the failure of basic education are:

1. While people readily accept in theory the dignity of work in practice and mental conviction, they are against it and so

unwilling to do manual work which is considered to be menial. This has been complicated by the fact that basic schools were intended for rural areas, as against schools in urban areas where there was not such work provided, with the effect that people began to believe that it was an inferior type of education for rural areas.

2. Basic education began and still continues to be in certain blocks as against the other traditional schools in which this work experience was not provided. The result was people chose the traditional schools.

3. The above factors were worsened by the fact that the high placed officers, ministers, rich men and others, who could afford, sent their children to convent schools, Public schools and English medium schools. More than anything else, this conclusively proved to the villagers that basic education was an inferior type of education imposed on them by the ruling classes, so that their children may be permanently kept backward and be involved in crafts and work as against the children of the elite, who had no such work and so could give more time to academic studies.

4. Another reason for the failure of basic schools was that somehow a misunderstanding crept in that spinning should be the only craft even in areas where cotton was not readily available. The leaders in basic education became dogmatic and resisted any original innovation, which could employ other crafts and experiences. This crystallisation did a great deal of harm not only to the concept of basic education but also to its implementation.

5. Basic school, by its very nature, required a better kind of teacher than a school in which only bookish education was taught. Not only should the teacher learn the craft well, but also its scientific implication. Coordinating the craft experience to class-room teaching was a matter which required considerable skill and knowledge in the teacher. But the teachers in basic schools in rural areas were generally candidates who had passed only VIII Standard and had one or two years of teacher training. With such teachers, what else will happen than the discrediting of the basic schools?

6. Lastly, the craft work was not properly done or respected. No student or teacher will respect any work the result of which is not only not respected but treated with indifference. The yarn spun in many schools accumulated and was put in lumber rooms

like waste material and not used. In early stages in some states the Government took this yarn and wove and returned it as clothes to be used by the students and teachers. In later stages things became so bad, that in many basic training schools yarn was literally wasted. If only administrative arrangements had been made to collect the craft work, treat it with respect and to make good use of it so that the students could be proud of their products, the children would have developed pride and delight in their work. This administrative debacle was again the result of the administration having been left to people who had no faith in the philosophy of work.

Now let us see what has happened to the multipurpose schools which had also sought to introduce crafts in the school curricula. The objective of the multipurpose schools was to diversify the school courses, so that in addition of academic courses, some vocational courses also could be in-built in the secondary education system. They wanted that the secondary education should be a complete unit by itself and not merely a preparatory stage for the college and that at the end of the secondary education course, the student must be in a position, if he wishes, to enter on the responsibilities of life and take up some useful vocation. To meet this end, they devised a set of core-subjects which every student should study and electives which can be chosen according to the option of the student. The core subjects were—(a) languages, (b) social studies and general science and (c) a craft to be chosen out of list of nine crafts mentioned by them. The electives offered in the scheme were (1) Humanities, (2) Sciences, (3) Technical (Engineering), (4) Commercial (Book-keeping), 5. Agriculture, (6) Fine Arts, and (7) Home Science. The main plank in the Second Five Year Plan was the implementation of this scheme of multipurpose schools. Large funds were allotted by the Central and State Governments for this purpose.

Let us now examine as to what happened to this course in the process of implementation. The crafts proposed to be introduced as part of the curriculum were introduced in many schools in the lower secondary stages, namely VI to VIII. But not being an examination subject, properly trained teachers were not appointed and students were not enthused to work regularly. Rarely anything useful was produced in these classes. The Father of the Nation and now the Education Commission have emphasised, that if the craft is efficiently done, it is bound to be productive. The Secondary Education Commission had wisely observed; the training in crafts requires two fundamental principles to be observed, namely proper training in crafts can be given only by

one who is an expert in that particular craft and secondly this education in craft will be only possible if a trained teacher is fully qualified in the craft and in the scientific aspects thereof. Pains were not taken to provide such efficient craft teachers, the result was the craft work done in schools was more in name than in fact, and the craft periods were treated with indifference.

With regard to the electives provided, for the first time in the history of secondary education in India, vocational courses were provided such as Technical (Engineering), Agriculture, Commercial (Secretarial) and Fine Arts. Of these the real vocational courses were technical, agricultural and commercial. But these also languished for two reasons. Proper teachers were not recruited BSc.(Ag.) in agriculture, BEs. in engineering, who were the competent people to teach these subjects, were not available as staff in the secondary schools for a variety of reasons. The administration could have gone into these reasons and removed the obstacles for their coming, but that was not done. The second reason was very important. These courses were neither provided with sufficient depth, so that they can become real end courses. One who had taken agriculture was not sufficiently trained to become an agriculturist or one who had taken engineering could not have become an engineering technician and found employment on the strength of that training. Neither were further avenues for higher education provided for them. The agriculture student could not join the agricultural college nor the engineering boy the engineering college. With the result, these courses also become courses for joining colleges. The secretariat course only served as an end course to become clerks, but as it had only limited prospects, this did not attract many pupils.

This account of failure in the introduction of crafts in schools in the immediate past history of our educational story has been recounted here, not as an argument against it, but to serve as a warning that we must draw lessons from the past and remove all barriers against a proper implementation. The following steps must be taken to make it a success:—

a. A social climate must be created by education of the people and by example of the leaders about the dignity of work.

b. Craft work and community service must be given a dignified place in the curricula. It must count for examination and grades its importance should be such that one who does not do it properly cannot get high academic distinction.

c. Teachers efficient and well qualified in their craft and with proper orientation of mind must be attracted and paid well, commensurate with others with mere technical and academic qualifications. In order to retain them, sufficient prospects must be provided.

d. The quality of the work of the students must be assessed and the best students, groups or classes should be recognised and rewarded. In the same way the school which produces the best results may also be honourably mentioned or otherwise recognised.

e. Norms should be fixed for efficient performance on the basis of (a) productivity, (b) quality, (c) minimum amount of wastage, and (d) economic values. Inefficient and wasteful craft work must be condemned.

f. Above all, the administration, namely heads of institutions, inspectorate and those in government should be educated and convinced about the usefulness of craft in the educational curricula and its usefulness in training our boys and girls in efficiency and good character.

In the foregoing paragraphs, I have mostly considered craft for productive work. But there are a variety of ways in which students and staff can do productive work, such as annual repairs in schools, such as painting, white-washing, repairing the furniture etc. The only criterion is that they must be organised efficiently and must be such as must inspire the students and staff with a sense of real achievement. In providing work experience, every attempt should be made to link the programmes realistically to technology, industrialisation and the application of science to productive processes.

Work experience can also be provided by students' participation in programmes of community development and national reconstruction. The Education Commission has mentioned also about labour and social service camps. As they have mentioned 'great care should be taken in selecting the projects for the camps'. The idea should be to have the projects taken up and completed within the time given. The students and teachers should feel that they are doing something worthwhile, the results of which will be of lasting benefit to the community. These are easily said that done. It requires tremendous enthusiasm and organisation to implement these programmes. It is a great mistake to think that a mere provision of funds will achieve the objectives in these cases. More than money, what is required

is faith in these programmes. Unfortunately, this is lacking very much in our educational personnel, in our educational administration and the leaders in the educational field. With such faith and organisation these projects will succeed. Without these, projects are bound to fail.

In this connection I would like to observe that the example set by the ministers, vice-chancellors, prominent politicians, religious and other leaders of society is of the utmost importance in creating a proper atmosphere for creating these qualities of work and integrity of service. In recent times certain incidents in the meetings of our Parliament and State assemblies have not been proper examples to our young people. Neither the constant charges of corruption made day in and day out in these assemblies have been particularly inspiring to our students towards good deeds and good action. It is wrong to think that educational institutions are things separate from society. They act and interact on each other. Therefore, a good and dignified public life is also the basis of a good educational system.

Mention has also been made of one year's national service. We have over two million students in our colleges. To provide one year of national service for nearly five lakhs of students will be a tremendous job both from the point of view of organisation and of investment. It is easy to give military training for one year. But to integrate social service with it will be a very difficult task indeed. I do not say it is impossible. But I do say it is very difficult. There may also be opposition from parents to this proposal. In the educational history of our country, many good projects have been proposed, undertaken and later condemned. That should not happen to this proposal. Let us not adopt over ambitious plans which have in them seeds of failure. We must draw plans which can succeed and implement them in places where they can be successfully implemented. The candidates who undertake these experiences must be preferred in government service or in other respects. The people who run it must have faith in them and must be appreciated properly. The administration should not be lukewarm as is the case in many such cases. Therefore, it requires deep thought by Government and universities before they start such programmes. It also requires very detailed and determined organisation, faith and integrity to be a success.

The future progress of our country depends upon our evolving a type of education in which science and hard work will combine to make our young men and women both intellectually eminent and practically efficient in performance of their duties.

NOTES ON POINTS FOR DISCUSSION

by

PROF. S. K. BOSE

Work Experience in the lower primary classes (I-IV/V)

The primary education which is mainly general and non-vocational should include some means of giving children a liking and respect for manual work, accustoming them to observation and creative effort. Simple craft work introduced at this stage must demand quality of thought and quality of work. The students should be encouraged to make something which should appear to them as useful at home and in the community. Simple aspects of craft work likely to be introduced in the higher primary classes may be encouraged. However, work not likely to contribute towards general education should be avoided. The suggestion made by the Commission for the introduction of simple hand work is accepted.

Work Experience in the higher primary classes (IV/V-VII/VIII)

2. The Commission's recommendation to introduce work experience in the form of learning a craft is accepted. The educational authorities should promote the organisation of education on the basic assumption that, with the development of technology, the need for more and better vocational education is far greater than is usually recognized. Moreover, if increasing numbers of young people are to be encouraged to acquire vocational education at different stages everything should be done to make it attractive, efficient and truly educational in the broadest sense. It is felt that these activities at the primary classes stage should be un-examined because the tendency would be to put the subject in a straight jacket if the subject becomes attached to an examination syllabus.

In the higher primary stage, all pupils should be offered a choice between various craft subjects in order that they may be better prepared to select a suitable work experience at the secondary classes stage. A proficiency in craft training at the end of higher primary class stage would help many to join ITI for obtaining necessary training in a vocation.

Work experience in lower secondary school classes (VII/VIII-X)

3. The Commission's recommendation that work experience at this stage should be productive and should be in real life situation is accepted. The necessary facilities and equipment should be provided to make this possible. Should this activity in the school be a project work? Traditional examinations tend to demand rote learning and pat answer while a project type of activity would tap a wide range of abilities that conventional examination cannot reveal. Project work will provide a form of activity in which the quest for creativity can be satisfied. In order to emphasize the importance of productive work in the educational requirement of a school student, it is recommended that the school leaving certificate at the end of X standard should be given in two parts—the first dealing with academic attainment and the second in respect of the skill of work attained. Unless both the parts are successfully completed the students should not qualify for entry to XI standard or to a university course of study. Considering the cost of construction, equipment and operation of vocational training in schools, such selected training facilities should be set up only where there is a steady and foreseeable demand for the students for these vocations.

4. It should be accepted that the necessary work experience as recommended above at all levels should not be denied on financial grounds to any person capable of benefiting from it. Appropriate means should, therefore, be taken by government or other authorities, to provide vocational education free of charge or to accord means of financial or other support to students needing such assistance without implied obligation.

Work experience in higher secondary school classes (X-XII)

5. In the Planning Commission paper circulated to the members of the Study Group it was stated that introduction of work experience at this stage may be postponed to the Fifth Plan. The Study Group did not consider the method of introduction of workshop practice or actual work experience in industrial or commercial concerns or on farms in detail. Perhaps some of the established technical high schools may be allowed to introduce some of the vocational courses enumerated in the Annexure to Chapter XV of the Report of the Education Commission as further education for school leavers. These schools should provide further education on full-time, part-time or sandwich basis.

At the ITIs

6. The education and training of skilled workers carried out at the Industrial Training Institutes under the Ministry of Labour while providing a broad basis for later specialization or advancement, should be directed to the practical and theoretical skills and knowledge which are or may be required for future employment. The responsible authorities should ensure that the students receive a comprehensive general education, while specialising in a trade. These students who join ITIs after VIII standard examination, should be encouraged to appear for X standard school examination as well.

Advisory Committee

7. All those concerned with education and particularly public authorities, educational bodies, and employers' and workers' organisations, as well as private educational organisations, should take every opportunity of mutual assistance and consultation in planning, developing and operating the scheme of vocationalisation of education at the school level, particularly at the secondary stage.

8. To assist the authorities responsible for the organisation of vocational education, an Advisory Commission should be set up at the national level to assist in the preparation of plans and to coordinate the work done in connection with any form of vocational education.

9. Advisory Committees at the local level should be set up to assist particular schools or other institutions. These Committees should keep in direct touch with these institutions and take part in their organisation. They should help in planning studies on local manpower requirements and advise on adapting the institutions with which they cooperate to the actual and foreseeable needs of users.

10. When providing facilities for vocational experience attention should be paid to local economic factors, and the importance of these specialities in the region. Where the number of students desirous of studying a particular speciality is considerable, a separate school should be formed, thus ensuring that proper attention is paid to the establishment of laboratories and workshops and to relevant administrative matters.

Guidance

11. Every student proceeding from general education to some form of vocational education should feel free to make his own choice in the light of his aspirations and with an understanding of his abilities and interests, bearing in mind the future demands for qualified staff and knowing that arrangements made by the responsible authorities will enable him later to change his field of training if he so wishes to continue his studies to the limit of his capacities, without encountering obstacles other than a longer period of training.

12. Without prejudice to the free choice mentioned above, appropriate entrance requirement standards should be established in order to avoid excessive wastage.

13. Guidance should enable students, through a more accurate knowledge of their individual potentialities on the one hand and of the requirements of the various groups of professions and the future needs of the economy on the other, to set themselves more precisely determined objectives and to attain them more certainly by taking advantage of the most appropriate means of training.

14. Guidance services should be available to all students whether provided by the school system or by other authorities.

15. A guidance and placement service should be established by the competent authorities to school students for the purpose of:

- (a) Maintaining full and systematic cumulative records of the students;
- (b) Providing students and parents with details of vocational opportunities, types of available courses and other relevant matters;
- (c) Helping students in interpreting the results of evaluations and in making decisions affecting them;
- (d) Assisting young persons in finding employment in accordance with the type and the level of education and training they have received or are receiving;
- (e) Maintaining contact with former students, whether graduates or not, and ensuring the efficiency of the guidance system employed.

PRODUCTIVE WORK IN EDUCATIONAL INSTITUTIONS

1. *The Need*

1.0. At the last meeting of the National Development Council the Prime Minister emphasised the necessity of introducing productive work in our educational institutions. In a subsequent letter to the Education Minister he wrote, "I do feel that some productive work for our students is desirable from every point of view. This work may be connected, wherever possible, with something useful for defence. Even if this is not so, indirectly it will be useful."

1.1. Systematic productive work is now generally recognised as a powerful medium of education. It leads to a fuller development of our manpower resources and their more effective deployment uninhibited by any inferiority attached to manual work. It channelises and encourages the constructive tendencies of children and the youth and provides a healthy outlet to their turbulent energy. By breaking the invidious distinction between intellectual and manual work it assists in the evolution of a classless society.

1.2. The present single track education of the academic type strictly limits the employability of the educated with the result that the number of educated unemployed has been increasing. It is estimated that the number of unemployed graduates doubled between 1955 to 1962, increasing from 1.2 lakhs to 2.8 lakhs. The number of unemployed matriculates is estimated to be about four times the number of unemployed graduates. With the rapid expansion of educational facilities in the future plans, this maladjustment between the supply and demand of educated persons is likely to assume unmanageable proportions unless effective steps are taken from now onwards. It is estimated that by 1975-76 the enrolment at the secondary stage will go up to 90 lakhs from 29.73 lakhs in 1960-61 and at the collegiate stage from 9.04 lakhs (arts, science and commerce only) to 23 lakhs (arts, science and commerce only). The problem of those who will have studied up to the middle, standard or less will need urgent attention, if we are to succeed in our plan to move the labour force progressively from the agricultural sector to the non-agricultural sector.

1.3. If productive work is linked up with the defence effort, it may have the additional advantage of channelising and stabilizing the existing wide-spread enthusiasm for contribution to the defence effort.

2. Existing position :

2.0. The value of productive work has been accepted in principle at practically all stages of the Indian system of education. At the elementary stage the goal of present policy is to convert all elementary schools to the basic pattern, where systematic productive work is at the centre of the educational process. The progress in respect of basic education has, however, been very slow for various reasons. By 1960-61, basic schools became only 32% of the total number of elementary schools and by the end of the Third Plan the target is to raise this percentage to 36. The position of craft work in these schools, however, is by and large unsatisfactory. The teacher does not have the requisite skill. The position in regard to craft equipment and raw material is unsatisfactory. The interest with which craft work is done and the attention which the supervisory staff gives to the craft work done in a school leaves much to be desired. The public has yet to be educated in the value of craft and manual work as a vehicle of education.

2.01. Realising the difficulties of introducing full-fledged basic education on a large scale and yet anxious to narrow down the gap between basic schools and ordinary schools, the Governments launched a programme of re-orientation of elementary schools to the basic pattern in the Second Plan which is continuing in the Third. The target is to complete this work by 1965-66. No data is available in regard to the quality of this orientation. It appears, however, that very little craft work is done under the programme. As early as November 1963 the Planning Commission addressed State Governments to link schools with community development. The Ministries of Education and Community Development, Panchayati Raj and Cooperation have jointly initiated the programme of 'orientation of school teachers to community development. Broadly the objectives of the programme are :

- (a) making orientation to community development an integral part of the syllabi of the training institutions for elementary school teachers; and

- (b) equipping the training institutions for elementary school teachers for training teachers in community development programme.

For this programme the following measures are being implemented:

- (i) training of at least two members of the staff of each training institution;
- (ii) equipping the teacher training institutions with books and materials necessary for imparting the training;
- (iii) starting extension service training in community development for the primary school teachers; and
- (iv) preparing necessary literature—syllabi, notes on methods of teaching, handbook for teachers etc, required for the purpose.

A provision of Rs. 27 lakhs to be made available by the Ford Foundation has been made for the programme for a period of five years. So far 793 principals of the training institutions have attended the seminars organised under the scheme while about 900 teacher educators have attended the one month orientation courses. Roughly 900 out of 1100 training institutions have been covered. In addition books and other literature on community development have been provided to the training institutions. Rs. 1200 will be provided to each training institution for introducing the subject in their practising schools. There is no provision at the moment for this programme as regards the other schools.

2.1 The Secondary Education Commission recommended, among others, the diversification of courses and the introduction of craft at the secondary stage. Of the total number of about 17,000 high and higher secondary schools the number of multi-purpose schools in 1960-61 was 2310 or 13.6%. Their percentage is likely to rise by 1965-66 to 14.8 and their number to 3280. As regards diversified courses, the total number of courses available in 1960-61 was 5947 of which humanities, science and commerce courses constituted about 71 per cent. The number of other courses available was: agriculture: 529, technology: 372; fine arts: 286; home science: 207; and others such as construction group in UP: 348. The exact number of students covered by these courses is not known.

The Secondary Education Commission considered the teaching of craft as an essential part of the secondary curriculum the purpose being not to prepare children for any particular vocation in life but to develop in them proper attitudes to work, make

them vocational minded and to help in the all-round development of their personality. The study: "A Study of Craft in Indian Education", conducted by the National Institute of Basic Education has indicated that while in all higher secondary and multi-purpose schools craft is taught as a compulsory subject (with the exception of Delhi and UP), in high schools syllabi it is either not there at all or is provided only as an optional subject except in Orissa and Madras where it is taught in schools, the most common being spinning and weaving, woodwork, tailoring, metal work and gardening. In view of the inadequate information made available by the States, it is difficult to find out the time that is usually devoted to the teaching of craft but it appears to vary between one to three hours per week. Similarly the status of craft in the assessment of a student's work also varies though full information in this regard is not available. The most important difficulty experienced appears to be shortage of craft teachers.

2.2 At the university stage a number of schemes have been launched to meet the need to introduce the students to productive work :

- (i) The scheme of labour social service camps was launched in the First Plan. The Government of India meets the entire cost of the camps. 10324 camps have been held so far and 9.72 lakh students participated. The scheme also includes campus work in which students create facilities for themselves like swimming pools, stadia etc. So far 727 projects have been sanctioned or completed.
- (ii) The scheme of hobby workshops has been started by the U.G.C. So far hobby workshops have been set up in 18 universities with an assistance of Rs. 1 lakh for each workshop from the University Grants Commission.
- (iii) Planning Forums have been set up in colleges and universities. Among many other things, the members of the forums also engage in physical work like building of approach roads, slum clearance etc.
- (iv) Setting up of Industrial Estates at 6 Centres—3 universities and 3 rural institutes—is also under consideration. Here the students will be paid for their work. A production-cum-training centre is already working at the Roorkee University, where students get the opportunity of working during their off time on a paid basis.

These schemes mark an important beginning in the orientation of university education towards productive and manual activity, but their coverage at present is small.

2.3 The present position of craft or manual and productive work in educational institutions is very unsatisfactory. Firstly, the coverage is very small. Secondly, the quality of work done is very poor.

3. *What more needs to be done*

To improve the situation the following programme is suggested for consideration, keeping in view our limited resources :-

- (1) All school (primary, middle and secondary) children in *rural areas* should have the opportunity to participate in community development work. This could include participation in farm work, building of approach roads, putting up of school buildings, contour bunding, afforestation, digging of water channels, soil conservation, etc. The tools and technical guidance will need to be provided by the farmers concerned and the block staff while free labour will be provided by the students. If some payments could be made on the basis of work done, it could go towards the provision of mid-day meals. The only cost of the programme will be the orientation of teachers in community development so that they can establish proper liaison with various people concerned and effectively organise the work of the students.

To all high and higher secondary schools in rural areas some simple equipment at the rate of Rs. 300 each may be provided so that they can do some work on their campus as well. It would ultimately be necessary to give this equipment to elementary schools also.

- (2) In *urban areas* where development activities in which children can participate without injury to their health are practically non-existent, and where land is not easily available, simple crafts like soap making, chalk and slate-pencil making, mat making etc. could be introduced. These crafts do not require much skill, equipment or space. The teachers will, however, have to be trained in these crafts. In view of the cost and organisational difficulties involved, it is proposed that in the first instance craft may be introduced in high/higher secondary schools only.

- (3) The above two programmes will introduce some sort of activity in all schools but it will be far from systematic craft work which is required for building up the necessary basic skills and attitudes. It is proposed that for the purpose, the teaching of craft work may be strengthened in 1000 out of the 18000 senior basic schools that will be there by the end of the Third Plan and in all the training schools. This will prepare the ground for the introduction of systematic craft work, on a large scale, in future plans.

4. *Linking up with defence needs*

The question of linking up the need for productive work by students with meeting the Defence needs was discussed with Shri H. C. Sarin, Additional Secretary, Ministry of Defence, and his officers. The following points emerged from the discussions :

- (1) The needs of the troops which the children can supply are limited as things required are of very precise specifications. The experience of the pull-overs knitted for the Jawans was not very happy.
- (2) The needs of the troops will vary and it would be necessary to review them from time to time so that the things produced meet a real need. In the first instance the following things could be produced :
 - (i) Two bed sheets, one pillow-case and one handkerchief to be produced for each Jawan.
 - (ii) Each school, wherever there are facilities of drawing and painting, should send one painting to the troops.
 - (iii) ITIs should produce things like soap-cases, indoor games etc.
 - (iv) Later, if need be, students can produce bandages, aprons, bed-sheets, pillow covers, mosquito nets etc. for the military hospitals.
 - (v) There is at present very little need for knitting because of the shortage of wool.
- (3) For the articles which the children will manufacture, the raw material required would be provided by the Ministry of Defence, who will also give the specifications and collect the products.
- (4) At the university stage, as the plan is to become compulsory for all students, it is easiest to link up productive work with NCC work. The NCC teachers would be

able to take the students for other productive work like contour-bunding, road building, afforestation, soil conservation etc. Tools should be provided by the organisation for which work is done. And as work will be done only in the vicinity of the institutions there will be no expenditure for the feeding of the students. An *ad hoc* provision of Rs. 50 thousands may be made for transport charges for carrying the cadets to the nearby villages. It could be so managed that the villagers where the cadets might work would gladly provide tea to the students.

Cost of the Programme

The cost of the above programme is worked out in details in the annexure and is summarised below :—

| | (Rs. in lakhs) |
|---|----------------|
| (1) Orientation of rural teachers in community development | 99.20 |
| (2) Provision of simple equipment to high/higher secondary schools in rural areas | 39.00 |
| (3) Provision of simple crafts in urban schools | 72.00 |
| (4) Training of urban teachers in the above crafts | 5.82 |
| (5) Strengthening craft teaching in selected senior basic schools | 40.00 |
| (6) Cost of strengthening in training schools | 237.00 |
| (7) Cost of the transport of cadets to nearby villages | 0.50 |
| TOTAL | 493.52 |

or Rs. 5 crores roughly.

The above costs are only tentative and will need to be worked out by the State Governments. Some money may also be found from the schematic budget of the blocks. The matter was discussed with Shri Chakravarti, Additional Secretary, Ministry of Community Development. He said that his Ministry would be prepared to recommend to the State Governments that they might attach high priority to this scheme in view of its significance for defence effort in its wider sense.

Sd/-
(D. P. Nayar)
Director (Education)

ANNEXURE

PRODUCTIVE WORK IN EDUCATIONAL
INSTITUTIONS—ESTIMATES OF COST

The table below indicates the number of elementary and secondary schools likely to exist at the end of the Third Plan in the country as a whole and in the rural areas :

| | No. of institutions in 1965-66 | | |
|--|--------------------------------|-------------|-------------|
| | Total | Rural areas | Urban areas |
| 1. Primary Schools | 4,09,000 | 374,000 | 35,000 |
| 2. Middle Schools | 56,000 | 48,000 | 8,000 |
| 3. High/Higher Secondary Schools | 22,000 | 13,000 | 9,000 |
| TOTAL | 4,87,000 | 435,000 | 52,000 |

COST IN RURAL AREAS

2. The students of *rural schools* could participate in the development activities being undertaken by the Community Development agency. For this purpose the teachers of elementary and secondary schools would need to be given an orientation course in community development. In addition to this training programme it would also be necessary to provide simple equipment to high and higher secondary schools in rural areas enabling them to undertake on a more regular basis such activities on the campus as *kitchen gardening*, levelling of the ground, building and repair of compound walls etc. Ultimately it would be desirable to provide this equipment to elementary schools also. The cost of providing (i) orientation training to school teachers and (ii) simple equipment in high and higher secondary schools would roughly be as under :—

A. Cost of orientation training*

(Rs. in lakhs)

| | |
|--|---------------|
| (a) of training primary school teachers—1 teacher per school—@ Rs. 20 per teacher 3.74×20 | 74.80 |
| (b) of middle school teachers—2 teachers per school—@ Rs. 20 per teacher $48000 \times 2 \times 20$ | 19.20 |
| (c) of high/higher secondary school teachers—2 teachers per school—@ Rs. 20 per teacher $13000 \times 2 \times 20$ | 5.20 |
| TOTAL | 99.20 |
| B. Cost of providing simple equipment in high/higher secondary schools @ Rs. 300 per school 13000×300 | 39.00 |
| TOTAL (A & B) | 138.20 |

COST IN URBAN AREAS

3. In urban areas the scope for students' participation in development activities is particularly non-existent. The form that productive work can generally take in these areas would be simple craft work by students. Since organisation of craft instruction on an appropriate scale would require considerable capital investment and elaborate arrangements for the training of teachers which is likely to take considerable time, the suggestion at this stage is restricted to the provision of simple crafts in high and higher secondary schools which can be organised by ordinary teachers after a month's training. This could provide as a base on which a more sound programme of craft instruction could be built in subsequent plans as and when more finances become available. The cost involved would be on two accounts viz., (a) provision of craft equipment and (b) training of teachers in simple crafts. As indicated in para 1 above the number of high/higher secondary schools in urban areas would be 9000 in 1965-66. At the rate of Rs. 300 for equipment and Rs. 500 for revolving capital for each school the cost would be $9000 \times 800 = \text{Rs. 72 lakhs}$.

*The Ministry of Education has estimated the cost of a seminar of 15 days for orientation of elementary school teachers to basic, with 50 participants in each seminar, as Rs. 2000 or Rs. 40 per head (source: Orientation of Elementary Schools to the Basic Pattern, Ministry of Education 1959-pp. 24-25). If only a week's seminar is organised as in Madras, the cost would be reduced to half or Rs. 20.

COST OF TRAINING TEACHERS IN SIMPLE CRAFTS

4. If 2 teachers from every high and higher secondary school are selected for training in simple crafts, the total number of teachers to be trained would be 18,000. If the whole training is to be completed in 6 months with 1 month for initial organisation of the programme, 3000 batches would have to receive training. On the basis of a training capacity of 100 nearly, 30 training centres would need to be organised. These can be organised in existing schools which would require to be provided with a shed and some equipment. Since it is assumed that the teachers would be instructed in three crafts each centre would have three craft instructors. On this basis the cost of training would be as under :—

| | |
|---|--------|
| 1. No. of teachers to be trained | 18,000 |
| 2. No. of trainees to be trained in one month | 3,000 |
| 3. No. of training centres required @ training capacity of 100 per centre | 30 |
| 4. No. of instructors required @ 3 instructors per centre | 90 |

Cost of salary, equipment and shed

(Rs. in lakhs)

| | |
|--|-------------|
| (i) of salary of instructors @ Rs. 400 per instructor per month— $90 \times 7 \times 400$ | 2.52 |
| (ii) of equipment and revolving capital @ Rs. 500 per equipment and Rs. 500 for revolving capital— $30 \times 1,000$ | 0.30 |
| (iii) of craft shed @ 10 sq. ft. per trainee and Rs. 10 as the cost per sq. ft. in each batch | 3.00 |
| TOTAL | 5.82 |

5. With a view to gaining experience for further strengthening the teaching of crafts in schools it is proposed to select a few senior basic schools for strengthening of craft training at this stage. The selection of senior basic schools is suggested because in these schools facilities in the form of equipment and craft instructors are partly available and therefore the cost of strengthening craft teaching in such schools would be much less than in case of schools where such facilities do not exist even

in a rudimentary form. Further, since the unsatisfactory organisation of craft in schools is to a large extent due to the incapacity of ordinary teachers to organise craft instruction it would be desirable to strengthen craft teaching in training institutions, in the first instance, in institutions training elementary school teachers. This would enable a more elaborate expansion of craft instruction in schools in subsequent plan periods. The cost of the programme would be as under :—

(Rs. in lakhs)

A. Cost of strengthening craft in senior basic schools

| | |
|--|--------------|
| (i) Total no. of senior basic schools | 18,000 |
| (ii) No. of schools to be selected for strengthening | 1,000 |
| (iii) Cost+ : | |
| (a) of equipment @ Rs. 1,500 per school— 1,000 × 15,000 | 15.00 |
| (b) of revolving capital @ Rs. 500 per school—1,000 × 500 | 5.00 |
| (c) of craft sheds @ Rs. 2,000 per school | 20.00 |
| TOTAL | 40.00 |

B. Cost of strengthening training school

| | |
|--|---------------|
| (i) No. of training schools | 1,500 |
| (ii) Cost : | |
| (a) of equipment for two crafts @ *Rs. 2,000 per craft —1,500 × 2,000 × 2 | 60.00 |
| (b) of craft shed for two crafts @ *Rs. 3,400 per shed—1,500 × 3,400 × 2 | 102.00 |
| (c) of revolving capital @ Rs. 1,500 × 5,000 | 75.00 |
| TOTAL | 237.00 |

+ Estimated by the sub-committee appointed by the National Board of Basic Education, in its meeting held on 10th and 11th August, 1962.

* Intimated by the Government of Bihar.

6. The total cost of the programme of providing productive work in schools, as outlined above would be as under :—

(Rs. in lakhs)

A. Rural Areas

| | |
|--|-------|
| 1. Cost of orienting teachers in community development | 99.20 |
| 2. Cost of providing simple equipment to high/higher secondary schools | 39.00 |

B. Urban Areas

| | |
|---|-------|
| 3. Cost of craft equipment in high/higher secondary schools | 72.00 |
| 4. Cost of training teachers in simple crafts | 5.82 |

C. Cost of strengthening craft instruction in senior basic schools and training institutions

| | |
|-----------------------------------|--------|
| 5. Senior Basic Schools | 40.00 |
| 6. Training Schools | 237.00 |

| | |
|-----------------|--------|
| TOTAL | 493.02 |
|-----------------|--------|

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**A NOTE ON "VOCATIONALISATION OF EDUCATION
AND WORK EXPERIENCE" BY COL. S. G. PENDSE,
DIRECTOR OF TRAINING, DIRECTORATE GENERAL
OF EMPLOYMENT & TRAINING, MINISTRY OF
LABOUR & EMPLOYMENT, NEW DELHI.**

INTRODUCTION

During the first meeting of the-Working Group on Vocationalisation and Work Experience of the Education Panel, held on 20th November, 1966, there was some discussion on the interpretation of the term "vocationalisation". It would, therefore, be worthwhile for the purpose of this paper to define what is meant by "vocationalisation". The intention here is not to give vocational training to all the school children to the extent that they would become skilled workers in any trade or skill. This is neither practicable nor desirable since such skill training is already the responsibility of other organisations.

2. The aim of vocationalisation should be to introduce the children to the world of work so that they would have no aversion to manual work and would be able to think in terms of making an honest living in terms other than by only getting a "white-collar" job. Such introduction to the world of work need not only be by teaching them certain elementary skills as obviously the scope of such training would be restricted by several factors.

3. One of the drawbacks of the present school system is that the children do not get any general knowledge of the type of world which they are living in today nor of the world they are likely to be in say ten to fifteen years from now. This deficiency can, to a certain extent, be corrected by recasting the present text-book teaching. This aspect will be dealt with in a later paragraph of this paper.

WORK EXPERIENCE

4. We now come to the main question *i.e.* what should be the type of work experience which can be given to the children? One of the greatest limitations here is their background. Hardly any of them know anything about even the most basic tools which

are normally required in every-day life *e.g.*, hammers, screw drivers, chisels, etc. to say nothing about any of the machine tools. Such ignorance (which certainly is not their fault) comes to light with almost every fresh intake in the I.T.I.s. The aim of work experience should, therefore, be to familiarise them with the usual simple tools which any citizen may be expected to be able to use and also give them the ability to co-ordinate their muscular effort with the mental one. One other aspect that we have to think about is to give to the children enough background for them to be able to understand a little of the more technically complex world which they may be expected to live in ten to twenty years hence. An elementary knowledge of electrical and electronic circuitry would, therefore, be helpful. The commercial services are also gradually coming to the fore. The types of elementary skills which may be taught to the children may be as given below :

- (a) Simple wood work.
- (b) Simple sheet metal work including soldering and brazing.
- (c) Simple electrical and electronic circuitry.
- (d) Very simple metal cutting and metal working without the use of machine tools.
- (e) Simple accounting and book keeping.
- (f) Stenography and typing.
- (g) Simple cutting & sewing by hand.
- (h) Knitting and darning.

Undoubtedly more skills can be added to this list but a lot will depend on the availability of the required facilities. It is not intended that every child must do all of these. By and large, however, boys may be expected to do the first four, and the girls the last two whilst both boys and girls may be expected to be able to do simple accounting and book keeping.

FACTORS INVOLVED

5. The problem in our case is a very huge one. Even if pilot projects are to be launched, they will be experimental in the sense that on their working will depend the further large

scale expansion of the scheme. One has, therefore, to look at this problem from the long-range point of view. The factors involved are as follows :—

- (a) Availability of financial resources.
- (b) Availability of necessary equipments and raw materials.
- (c) Availability of the right types of teachers.

The problem can, to a certain extent, be made more manageable by restricting the vocationalisation of the school curricula to the last three years of the eleven-year educational programme (high school certificates). Only at a much later date can we think of starting this scheme at an earlier stage than the 9th class.

METHOD

6. Obviously it will not be possible to introduce this element in every secondary school in every town in the country. At least in the urban areas, it should be possible to establish central schools which may be called "Elementary Skill Training Schools" (ESTS) to distinguish them quite clearly from the pre-employment training institutions e.g. the I.T.I.s. Each such school would cater for a number of secondary schools, the number of the latter depending on the total number of pupils.

EXPENDITURE

7. It is not possible to work out the total recurring and non-recurring expenditure at this stage unless the actual skills to be taught are decided upon. It will also be necessary to decide on the extent to which such skills are to be taught as the equipment to be provided will depend on the syllabus and standard. However, once a decision on the skills is taken, it should not be difficult to arrive at an estimate of the number of ESTS which would be required and thus the total recurring and non-recurring expense. The availability of material for metal working will, however, present a problem, because there is already a shortage of such materials and the large requirement of the ESTS may make the situation much worse.

TEACHERS

8. The problem of teachers will be an extremely difficult one to tackle as the type of teachers required for this scheme will be quite different from the ones employed under the normal school system as well as the ones employed in the vocational

institutions. Special training programmes will have to be devised to train such teachers. In fact, apart from the question of financial resources, the question of teachers will perhaps be the most difficult one to tackle. The views of the Working Group will be most useful in this matter.

CONTEMPORARY GENERAL KNOWLEDGE

9. One further point which the Working Group may like to consider, even though it may not be directly connected with vocationalization, is the question of "contemporary" general knowledge. In the fast changing world of today, there is an urgent need that our future citizens should be given such knowledge during their schooling period. This should not be confined only to the elements of knowledge of the engineering industry in all its various facets but of all other forms of social activity. Some of the subjects on which general knowledge can be given are:—

- (a) Personal and social hygiene.
- (b) Elementary knowledge of dietetics such as proteins, carbohydrates, vitamins and their relationships to human health.
- (c) Electricity and how electrical machines work.
- (d) Agriculture including how tractors work, rotation of crops, fertilizers and their importance.
- (e) Elementary economics including general aspects of economic history, exports and imports, importance of quality and the like.
- (f) Elementary book keeping.
- (g) Genetics and family planning.
- (h) Knowledge and simple machines *e.g.*, petrol engines, diesel engines, steam engines and the like.

These are only a few examples and many others can be included. What is intended to be conveyed here is that this subject should be made compulsory in all schools. Special text-books will have to be written in the regional languages. At our stage of development, it shall not be impossible for us to have simple articles on not only the subjects mentioned above but also others written

by experts in these fields in the regional languages. The education in general contemporary knowledge should be given throughout the secondary school stage. At present, a certain amount of general knowledge is being given to the students but there seems to be no uniformity of policy about this. If, however, such books can be prepared centrally and then translated into regional languages, this should go a long way towards filling a very urgent need. Such knowledge will, it is felt, automatically motivate the students to take up the numerous vocations in different spheres of life rather than to go in only for the so called "white collar" jobs.

10. An important corollary to this is the training of teachers who apart from their parents, influence the lives and thinking of the children to a large extent. In fact, in the field of general knowledge, they are in a far better position to give guidance to their pupils than the parents. The standard of contemporary general knowledge of the teachers is extremely poor. It would be worthwhile to spend a certain amount of money in training the teachers in this respect. The precise mechanism by which this can be done, can be worked out after this principle has been accepted. The Vocational Guidance Officers of the Dte. General of Employment and Training may be able to play a big part in this activity.



**A NOTE ON PRE-VOCATIONAL TRAINING SCHEME
BY COL. S. G. PENDSE, DIRECTOR OF TRAINING,
DIRECTORATE GENERAL OF EMPLOYMENT & TRAINING,
MINISTRY OF LABOUR & EMPLOYMENT, NEW
DELHI-1.**

The Pre-Vocational Training Scheme for imparting education and training to the children in the age group 11-14 years who, for economic or other reasons, could not continue their studies beyond primary education, was started by the Government of India in August, 1963, with the assistance of UNICEF, ILO and UNESCO. During the Third Plan period, 65 Centres were to be established. 63 Centres have already been set up in the States as in the list enclosed. Two more Centres, one in Orissa and the other in Gujarat are likely to be set up this year to complete Third Plan programme. ILO and UNESCO assisted the scheme by way of providing experts for preparing syllabus and giving technical advice. The technical syllabus and guidelines for teaching general education subjects have already been prepared in consultation with the ILO expert, namely, Mr. Fleming and UNESCO expert, namely, Mr. Buchan. The syllabi thus drawn up have already been circulated to all the Pre-vocational Training Centres and State Governments/Administrations who are running the Centres with the 100% assistance from the Centre. The expenditure for running the Centres is being shared by the Government of India and UNICEF. UNICEF's contributions are as follows :

- (a) Supply of tools and equipment to each centre.
- (b) Books for the library.
- (c) Supply of teaching aids including filmstrips etc.
- (d) Salary for Senior Craft Instructors.
- (e) Supply of text-books and drawing instruments.
- (f) Expenditure connected with the seminars.
- (g) Salary of Career Masters.

Government of India's contributions are given below :

- (a) Honorarium to Headmasters.
- (b) Salary of Craft Instructors.
- (c) Salary of General Education Instructors.
- (d) Salary of L.D.C., Peons etc.
- (e) Training charges for students and Craft Instructors.
- (f) Miscellaneous expenditure.
- (g) Cost of construction of workshop sheds.

In the beginning, 20 Youth Vocational Trainees were trained in C.T.I. at Kanpur. With the services of trained personnel Regional Training Centres were started for training Craft Instructors and Career Masters in Bombay, Madras, Ludhiana, Narendrapur and Secunderabad. 235 Craft Instructors have been trained in the Regional Training Centres and posted in the various pre-vocational Training Centres established in the country. The duration of the training period of the Craft Instructors etc. is 5 months.

The training course in the Centres is of a composite nature consisting of (1) general education of middle school standard and (2) vocational training in the various trades like, fitting and turning, sheet metal work, carpentry, smithy and gas welding (low pressure). Three hours in workshop training and two hours in general education in all working days are the working hours. The duration of the course is for a period of 3 years. The 5 Regional Training Centres are directly under the administration of the Department of Social Welfare and other Pre-vocational Training Centres excluding the Pre-vocational Training Centres attached to the Regional Pre-vocational Training Centres as Demonstration Centres are run by the State Governments/Administrations. The Centres are to send progress reports every month which are scrutinised in this department, and wherever any discrepancy is noticed, the State Governments are requested to rectify it. Each Pre-Vocational Training Centre is under the administrative control of the head of the school to which it is attached. Each Centre has 4 Craft Instructors, 2 General Education Teachers and one Career Master. The number of children studying in the Centres at present come to the region

of 3,000. It is expected that the existing Centres and the 2 Centres likely to be set up this year, will have about 4,000 children during 1967-68.

In order to make an assessment of the work of the Pre-Vocational Training Centres, an All-India Seminar was held in Calcutta in June, 1966. The Seminar made several recommendations for the improvement of the existing centres and for expansion of the programme, during the Fourth Plan period. The recommendations of the Seminar have been implemented.

The first batch of trainees after completing three years' course, have come out from the Pre-Vocational Training Centres attached to the Regional Training Centres at Narendrapur, Madras, Secunderabad and Ludhiana. In consultation with the D.G.E. & T. and the Ministry of Education, the State Governments/Administrations have been requested to equate the three years' course with that of middle school passed and that the successful trainees may be given preference for admission to the Junior Technical Schools as already declared by the Government of Madras.

Budget for 1967-68 are as follows:

| | |
|---------------------------------|-----------------|
| Pre-Vocational Training Centres | Rs. 33 lakhs. |
| Regional Training Centres | Rs. 4.75 lakhs. |

FOURTH PLAN PROGRAMME

| | |
|---|-----------------|
| Plan Outlay as agreed to by the Planning Commission | Rs. 3.5 crores. |
|---|-----------------|

On the basis of the recommendations of the All-India Seminar held in Calcutta in June, 1966, and in consultation with the International Agencies who are assisting in the scheme, a comprehensive plan for the expansion of the programme was drawn up. It was contemplated to set up 200 additional centres during the Fourth Plan period. The Working Group which met in the Planning Commission last year under the Chairmanship of the Secretary, Planning Commission, proposed to set up 40 new Centres during 1967-68. The Planning Commission, however, considering that the funds for 40 additional Centres might not be available during 1967-68, recommended to establish 25

new Centres. Accordingly, this department decided to set up new Centres in the following States :

| State/Union Territory | Proposed no. of Centres to be open- ed during 1967-68 |
|----------------------------------|--|
| 1. Andhra Pradesh | 1 |
| 2. Assam | .. |
| 3. Bihar | .. |
| 4. Gujarat | 2 |
| 5. Haryana | 2 |
| 6. Jammu & Kashmir | 2 |
| 7. Kerala | 1 |
| 8. Madhya Pradesh | 2 |
| 9. Madras | 1 |
| 10. Maharashtra | 2 |
| 11. Mysore | 1 |
| 12. Orissa | 1 |
| 13. Punjab | 2 |
| 14. Rajasthan | 2 |
| 15. Uttar Pradesh | 2 |
| 16. West Bengal | 2 |
| 17. Delhi | 1 |
| 18. Goa, Daman and Diu | .. |
| 19. Pondicherry | .. |
| 20. Himachal Pradesh | .. |
| 21. Chandigarh | 1 |
| TOTAL | 25 |

On the basis of existing pattern of expenditure, the Ministry of Finance was approached to make a provision of Rs. 36.50 lakhs for the new Centres during 1967-68 out of which about Rs. 10 lakhs would be coming out of UNICEF's contributions. As the Ministry of Finance has not agreed to make any provision, no new centre can be set up during the current financial year. As the UNICEF is agreeable in principle to continue its assistance in the expansion of the programme, it is now proposed to set up additional Centres during 1968-69 which includes some Centres for the girls and a few Centres with agricultural bias. Details of the programme are being worked out.



A NOTE ON "PROJECT FOR THE ESTABLISHMENT OF A WORK EXPERIENCE CENTRE IN AN URBAN AREA" BY SHRI A. S. LALL, ADDL. DIRECTOR, DIRECTORATE OF TRAINING, DIRECTORATE GENERAL OF EMPLOYMENT & TRAINING, GOVERNMENT OF INDIA, NEW DELHI.

The Education Commission in its report has laid a great stress on "relating education on needs and aspiration of the people".

To forge the link between education and productivity, the Education Commission has recommended a high priority to be given to the following programmes in the plans of educational reconstruction:—

- (a) Science as a basic component of education and culture.
- (b) Work experience as an integral part of general education.
- (c) Vocationalisation of education especially at the secondary school level to meet the needs of industry, agriculture and trade, and
- (d) improvement of scientific and technological education and research at the university stage with special emphasis on agriculture and allied sciences.

This project is restricted to the second programme mentioned above, *i.e.*, organisation of a Central Work Experience Centre, in an urban area, like Delhi, for the entire central school district.

It is envisaged in the early stages, the number of students seeking facilities for work experience will not be very large. The movement will, however, become popular depending amongst other factors, the way the pilot Central Work Experience Centre functions. Care has, therefore, to be taken in selection of occupations, location of the Work Experience Centre, selection of the instructional staff and above all the head of the organisation on whose initiative and drive the movement will get popular.

It would be un-economical to set up a number of Centres. Moreover, even if funds are available directional and instructional staff of the right calibre would not be available easily. It is, therefore, intended to set up for each school district a Central-Work Experience Centre. Students of classes IX, X and XI from neighbouring schools will attend this Centre on a day-release basis.

The Centre should work in double shift, i.e., in morning from 8.00 a.m. to 12.00 noon and 12-30 p.m. to 4-30 p.m. in the afternoon. This will enable students from different schools having different weekly hours to attend the Centre.

Each shift will cater for 220 students.

Students of IX class should attend one day in a week.

Students of X and XI classes should attend two days in a week.

In other words students of IX class would be spending 4 hours per week and the senior boys 8 hours per week.

The Centre will be able to cater for 240×2 (shifts) $\times 6$ (days) = 2880 in the first year from IX class standard only.

In the following year additional facilities will have to be provided to meet the requirements of X and XI class students. In planning building care will have to be taken to provide land for expansion of building. *सत्यमेव जयते*

Location of the Centre will play a very important part in attracting students from the entire school district. The Centre should be located in an area which is well served by transport services.

For the far-flung schools perhaps arrangements will have to be made for a mobile van to visit such schools in rotation during the week.

Provision for a mobile van fitted with kit boxes, etc. will have to be made.

SELECTION OF OCCUPATION

The Commission in its report para 8.74 has stated that the range of possible activities that can be provided in a programme

of work experience is very wide, and the choice will be determined merely by the availability of materials and trained instructors. The list of such activities for the IX, X and XI classes given as an appendix to the chapter VIII has been adopted for working out financial implications. Final sanction of activities will be made with reference to the prevailing conditions.

CURRICULUM AND JOB-CONSTRUCTION

Job construction will have to be done very carefully with a view to giving the students a sense of satisfaction. This can be only possible if the job construction is done in advance by experts in the Work Centre under the guidance of the head of the institution. This work will be of continuous nature so that the students do not feel bored and their interest in the work is sustained during their period of stay.

Financial implications—Financial implications have been worked out in the statement which follows :

Estimated expenditure for the Central Work Experience Centre with 440 seats

Working in two shifts

Morning shift . . . 8 A.M. to 11 A.M.—First shift.

Day shift . . . 12 Noon to 4 P.M.—Second shift.

| Recurring | Land & Buildings | Tools & Equip. | Furniture |
|---|------------------|----------------|-----------------|
| 1·588 | 1·760 | 0·800 | 0·154 |
| Total Non-recurring | | | Rs. 2·714 lakhs |
| Recurring | | | Rs. 1·588 lakhs |
| Capital expenditure (non-recurring) | | | Rs. 3·283 lakhs |
| Recurring expenditure per year | | | Rs. 1·588 lakhs |
| Two batches taking training for thrice a week | | | |
| 440 × 3 = 1320 | | | |

Hence recurring expenditure p.m. per trainee Rs. 5·00

ANNEXURE I

Trades and seats for 440 seats

| Serial No. | Trades | Shifts | | Total |
|-----------------|--|----------------|-----------------|-------|
| | | First shift | Second shift | |
| 1 | Wood Work | 10 | 10 | 20 |
| 2 | Simple metal work | 10 | 10 | 20 |
| 3 | Basket work | 10 | 10 | 20 |
| 4 | Leather work | 10 | 10 | 20 |
| 5 | Ceramics | 10 | 10 | 20 |
| 6 | Soap making | 10 | 10 | 20 |
| 7 | Electrical repair | 10 | 10 | 20 |
| 8 | Model making | 10 | 10 | 20 |
| 9 | Lino cutting | 10 | 10 | 20 |
| 10 | Book binding | 10 | 10 | 20 |
| 11 | Wood carving | 10 | 10 | 20 |
| 12 | Simple farm mechanics | 10 | 10 | 20 |
| 13 | Crop care | 10 | 10 | 20 |
| 14 | Care of soil | 10 | 10 | 20 |
| 15 | Workshop maintenance | 10 | 10 | 20 |
| 16 | Preserving—Fruits & Vegetables | 10 | 10 | 20 |
| 17 | Cookery | 10 | 10 | 20 |
| 18 | Class room decoration | 10 | 10 | 20 |
| 19 | Fabric Printing | 10 | 10 | 20 |
| 20 | Tailoring | 10 | 10 | 20 |
| 21 | Toy making | 10 | 10 | 20 |
| 22 | Millinery | 10 | 10 | 20 |
| TOTAL | | 220 | 220 | 440 |

ANNEXURE II

Cost of land and building for 440 seats

I. Cost of land—Existing school land.

II. Cost of construction of Centre building for 220 seats working in 1st shift :

Workshop building including ancillary building Average 40 sq. ft. per seat

$$220 \times 40 = 8800 \text{ sq. ft.}$$

Rate of construction Rs. 20 per sq. ft. including electric installation, water supply etc.

$$\text{Rs. } 8,800 \times 20 = 1,76,000$$

$$\text{I+II—Total } 1,76,000$$

or Rs. 1.76 lakhs.



ANNEXURE III

Cost of furniture for 440 seats

| | Rs. |
|--|---------------|
| Cost of furniture for Centre @ Rs. 60 per seat for 220 seats working in 1st shift— 220×60 | 13,200 |
| Cost of furniture for Centre @ Rs. 10 per seat for 220 seats working in 2nd shift— 220×10 | 2,200 |
| TOTAL | 15,400 |

or Rs. 0.154 lakhs.

ANNEXURE IV

Cost of tools and equipment for 440 seats

| Sl. No. | Trades | No. of seats | | |
|-------------|--|--------------|-----------|---|
| | | 1st shift | 2nd shift | |
| 1 | Wood work . . . | 10 | 10 | Taking average cost for tools and equipment @ Rs. 1500/- per unit of 10 for every trade working in 1st shift. |
| 2 | Simple metal work . . . | 10 | 10 | |
| 3 | Basket work . . . | 10 | 10 | |
| 4 | Leather work . . . | 10 | 10 | |
| 5 | Ceramics . . . | 10 | 10 | |
| 6 | Soap making . . . | 10 | 10 | |
| 7 | Electrical repair . . . | 10 | 10 | |
| 8 | Model making . . . | 10 | 10 | 1500 × 22 = 33,000 |
| 9 | Lino cutting . . . | 10 | 10 | Taking average cost for hand tools Rs. 500 per unit of 10 for every trade working in second shift. |
| 10 | Book binding . . . | 10 | 10 | |
| 11 | Wood carving . . . | 10 | 10 | |
| 12 | Simple Farm mechanics . . . | 10 | 10 | |
| 13 | Crop care . . . | 10 | 10 | |
| 14 | Care of soil . . . | 10 | 10 | |
| 15 | Workshop maintenance . . . | 10 | 10 | |
| 16 | Preserving—fruits and vegetables . . . | 10 | 10 | 500 × 22 = Rs. 11,000 |
| 17 | Cookery . . . | 10 | 10 | Total Rs. 44,000 |
| 18 | Class room decoration . . . | 10 | 10 | |
| 19 | Fabric printing . . . | 10 | 10 | |
| 20 | Tailoring . . . | 10 | 10 | |
| 21 | Toy making . . . | 10 | 10 | |
| 22 | Millinery . . . | 10 | 10 | |
| TOTAL . . . | | 220 | 220 | |

| | |
|---|--------|
| | Rs. |
| (a) Cost of installation and bus for transport etc. . . . | 6,000 |
| (b) Library : cost of books & journals | 5,000 |
| (c) Teaching aids, including film strips and other audio-visual aids @ Rs. 5,000 per Centre | 5,000 |
| (d) Mobile van—filled with equipment | 20,400 |

TOTAL . . . 80,000

or Rs. 0.80 lakhs.

ANNEXURE V

Recurring expenditure for 440 seats

| Sl. No. | Item | Seats 440 for 12 months |
|------------|--|----------------------------|
| | | Rs. |
| I | Cost of establishment | 1,03,440 |
| II | Cost of training grant, raw materials and training wastage @ Rs. 10/- p.m. per trainee | 52,800 |
| III | Contingencies @ 0.50 P. p.m. per trainee | 2,640 |
| | TOTAL | 1,58,880 |

NOTE : Number of craftsmen Instructors 22 will attend both shifts (1st and 2nd) i.e. 3 hours in the morning and 3 hours in the evening. Hence there will be no extra expenditure for the 2nd shift.

सत्यमेव जयते

A NOTE ON THE INTRODUCTION OF ELEMENTARY WORKSHOP PRACTICE AS AN ACTIVITY UNDER WORK EXPERIENCE (CLASSES V TO X) PREPARED BY THE CENTRAL SCIENCE WORKSHOP, N.C.E.R.T.

'An ounce of practice is worth more than a ton of theory'

SWAMI VIVEKANANDA

1. INTRODUCTION

The Education Commission in its report includes WORKSHOP PRACTICE as an item of activity under work experience and further mentions that in the higher classes 'the emphasis would shift to workshop practice or actual work-experience in industrial or commercial concerns or on farms'. In an age where science and technology are moulding the lives and careers of millions of human beings all around the globe, and where standardization is inexorably encroaching on all aspects of human activity, it is but proper that the student of modern times, specially in a developing country like ours, should be exposed to the rudiments of technological practices and to an awareness of dimensions from an early age.

While the above is the general objective in view, it is necessary to avoid any deliberate foisting of workshop theory on the child's mind. The practice must fit into the general pattern of education the student receives in the home and in the school. A dimensional awareness must grow gradually, rather be absorbed gradually by the child like a process of osmosis.

2. THE SCOPE OF ACTIVITY

The scope of activity takes off from paper and card board work, to sheet metal and fret work, and goes through fitting and turning work, and rounds off with elementary soldering practices. The exercises are graded in the order in which they are expected to be performed by the students.

2.1. CLASSES V & VI

To start with, single plane surfaces and geometrical concepts are introduced. The idea here is that the child would have done paper cutting, card board cutting and folding, and possibly fre-

work, from classes K.G. to IV. It is, therefore, expected that the student would be in familiar surroundings if from class V onwards (class V of the 10-year school system as recommended by the Education Commission) he is introduced to single plane surfaces, in metal and wood. As such, exercises 1 to 11 as enclosed, deal with sheet metal cutting and sheet wood work (ply wood and/or commercial hard board).

The metal sheet used would be 24/26 SWG and so sufficiently thin enough to be used by the students for cutting purposes. On the wood side, the fret saw and ordinary saw could be used to prepare the models—all in a single plane or minor variations. The student gets an idea of the elements of marking on metal/wood, and learns to use the scale, scriber and divider.

The list of tools and accessories required for these two classes and for the exercises indicated above, is as follows. The approximate cost is also given, but this is, however, only indicative and for budgetary purposes.

For Classes V & VI
(For a batch of 15 students)

| Sr. No. | Name of the article | Quantity | Amount |
|---------|--|----------|--------|
| 1 | 2 | 3 | 4 |
| | | Nos. — | Rs. |
| 1 | Creasing hammer | 8 | 48·00 |
| 2 | Ball Pane hammer | 1 | 3·00 |
| 3 | Grooved punch 1/8" to 5/16" | 1 | 15·00 |
| 4 | Rivetting punch 1/8" to 3/8" | 1 | 20·00 |
| 5 | Brick iron | 1 | 30·00 |
| 6 | Anvil small | 1 | 35·00 |
| 7 | Tinman's snip straight pattern of 6", 8" and 10" | One set | 30·00 |
| 8 | Wooden mallet 2½" | 8 | 16·00 |
| 9 | Hatchet stake | 1 | 15·00 |

| 1 | 2 | 3 | 4 |
|-----------------|---|---|-------------|
| 10 | Scale 12" or 300 mm | 3 | 12·00 |
| 11 | Circumference scale 36" | 1 | 6·00 |
| 12 | Bench with 2 vices (6' × 3' × 2½') | 4 | 1200·00 |
| 13 | Channel iron pieces (5" × 3" × 3" × 2 ft. long) | 2 | 20·00 |
| 14 | Creasing iron small size | 3 | 15·00 |
| 15 | Spring divider 4" | 3 | 9·00 |
| 16 | Fret saw (foot operated) | 1 | 140·00 |
| 17 | Key hole saw | 1 | 5·00 |
| 18 | Scriber | 8 | 8·00 |
| TOTAL | | | Rs. 1627·00 |

2.2. FOR CLASSES VII AND VIII

The student would be introduced to working with objects in three dimensions—length, breadth and height. He would be working with both wood and metal. In wood, sawing, planing, marking and elementary joining would be taught, but not as processes as such, but as part and parcel of familiar objects within the student's range of awareness.

In metal and sheet metal work, the student would learn cutting, filing, marking, drilling, tapping, rivetting, and elementary development in sheet work. The use of try-square is also to be introduced at this stage.

The range of jobs included (exercises 12 to 25B) take care of all these processes without any conscious attempt on the part of the teacher to teach these as such.

The media is either wood or metal for these jobs and the jobs have been deliberately grouped without a formal division between wood and metal. The student will work with either or both and in the process become aware of proportions and dimensions, and also get the 'feel' of working with different materials.

In fact these exercises are the corner stone of this activity as a whole, and must be gone through with the student systematically by the instructor.

A list of tools and equipment required for a batch of 15 students, at this stage, is as follows :—

For Classes VII & VIII
(For a batch of 15 students)

| Sr. No. | Name of the article | Quantity | Amount |
|---------|--|----------------|---------|
| 1 | 2 | 3 | 4 |
| | | | Rs. |
| 1 | Work benches 6' × 3' × 2½' with two vices each (4" jaws) | 4 Nos. | 1200·00 |
| 2 | Scale 12" (300 mm) | 12 Nos. × 3 | 36·00 |
| 3 | Chisel flat 3/4" | 16 Nos. × 1 | 16·00 |
| 4 | Chisel cross cut 1" | 16 Nos. × 1 | 16·00 |
| 5 | Hammer 1 lb. | 8 Nos. × 2 | 16·00 |
| 6 | Hammer 1/4 lb. | 8 Nos. × 1 | 8·00 |
| 7 | Scriber 8" | 8 Nos. × 1 | 8·00 |
| 8 | Centre punch 4" | 8 Nos. × 1 | 8·00 |
| 9 | Hack Saw frame 12" (adjustable) | 16 Nos. × 4 | 64·00 |
| 10 | Try Square 6" | 8 Nos. × 5 | 40·00 |
| 11 | Divider 4" (spring) | 6 Nos. × 4 | 24·00 |
| 12 | Calliper 4" O/S Spring | 8 Nos. × 4 | 32·00 |

| 1 | 2 | 3 | 4 |
|----|--|---------------|---------|
| | | | Rs. |
| 13 | Calliper 4" O/S Spring | 8 Nos. × 4 | 32·00 |
| 14 | Odd leg calliper 4" (Spring) | 8 Nos. × 4 | 32·00 |
| 15 | Surface plate 12" × 12" (C grade) | 2 Nos. | 400·00 |
| 16 | F-Blocks—4½" × 4½" × 5" | 2 pairs | 90·00 |
| 17 | Scribing blocks—10" | 2 Nos. | 20·00 |
| 18 | Combination square | 1 set | 350·00 |
| 19 | Flat File bast & smooth 10" | 32 Nos. | 96·00 |
| 20 | File Square bast & smooth 8" | 32 Nos. | 96·00 |
| 21 | File H/R bast & smooth 6" | 16 Nos. | 40·00 |
| 22 | File Round bast & smooth 6" | 16 Nos. | 40·00 |
| 23 | File Round bast & smooths 10" | 16 Nos. | 40·00 |
| 24 | Power saw machine 16" stroke | 1 No. | 400·00 |
| 25 | Drilling machine with motor and chuck— 1/2" capacity. | 1 No. | 600·00 |
| 26 | Drills set 1/8" to 1/2" | 1 set | 120·00 |
| 27 | Drill 3/16, 5/16 and 1/8 | | 28·00 |
| 28 | Tap set 1/4" and 3/8" | 2 sets | 20·00 |
| 29 | Tunnel Stake | | 50·00 |
| 30 | Rounding Stake | | 45·00 |
| 31 | Square heads | | 15·00 |
| 32 | Round bottom stake | | 35·00 |
| 33 | Grooving stake | | 40·00 |
| 34 | Finman's horse | | 40·00 |
| 35 | Pipe stake | | 25·00 |
| 36 | Half round stake | | 12·00 |
| | | | 4086·00 |

| 1 | 2 | 3 | 4 |
|---------------------|--|---|---------|
| <i>Wooden tools</i> | | | Rs. |
| 37 | Double-ended bench grinder (7" dia wheels) | | 600·00 |
| 38 | Jack plane 4 Nos. | | 60·00 |
| 39 | Smoothing plane 4 Nos. | | 40·00 |
| 40 | Tennon saw—10" 6 Nos. | | 24·00 |
| 41 | Firmer chisel 3/4" 6 Nos. | | 36·00 |
| 42 | Firmer chisel 1/2" 6 Nos. | | 30·00 |
| 43 | Firmer chisel 1/4" 6 Nos. | | 24·00 |
| 44 | Cross cut saw 14" 2 Nos. | | 20·00 |
| 45 | Mortise chisels 3/16" 6 Nos. | | 30·00 |
| 46 | Mortise chisels 1/4" 6 Nos. | | 30·00 |
| 47 | Mortise gauge 6 Nos. | | 42·00 |
| 48 | Screw drivers 6" 4 Nos. | | 6·00 |
| 49 | Oil stone 6" × 2" × 1" 2 Nos. | | 16·00 |
| 50 | Sand stone 6" × 2" × 1" 6 Nos. | | 30·00 |
| 51 | Working benches with wooden vices 4 Nos. | | 1200·00 |
| 52 | Hand drill 1/4" capacity 1 No. | | 40·00 |
| 53 | Pencer 6" 2 Nos. | | 20·00 |
| 54 | Hammer ball pana 1 lb. 4 Nos. | | 10·00 |
| 55 | Key hole saw 2 Nos. | | 10·00 |
| 56 | Sash Cramp 1 No. | | 50·00 |
| | | | 2318·00 |

2.3. CLASSES IX & X

The student will be initiated into simple turning, step turning, more sheet work, and elementary soldering. The turning required is only to caliper accuracy. Then the student will move on to combined exercises *i.e.*, to jobs with elements of fitting, turning, sheet work and soldering involved in the making of the job. The idea is to inculcate in the student's mind elements of different workshop practices involved in selected jobs and within the range of the student's familiarity. A set of these jobs are from Ex. 26 to 37. The list of tools and equipment required at this stage is as follows :—

| Sr. No. | Name of the article | Quantity | Amount |
|---------|--|----------|----------------------|
| | | | Rs. |
| 1 | Lathe machine 4½' bed (with normal accessories). | 2 Nos. | 12,000 |
| 2 | Tool bits assorted | | 150·00 |
| 3 | Chucks-universal and independent (one each) | | 500·00 |
| 4 | Drill chuck ½" capacity | | 40·00 |
| 5 | Sleeves 4-2, 2-3, 3-4 | One set | 13·00 |
| 6 | Scribing blocks 10" | | 18·00 |
| 7 | Spanners set | | 14·00 |
| 8 | Screw wrench 12" size | | 15·00 |
| 9 | Items required for brazing and tinning | | 300·00 |
| | | | (lump sum provision) |
| | | | 13045·00 |

2.4. Summing up the exercises the nature of which have been briefly described in the earlier paragraphs, it is seen that the following operations are involved in each one of them as detailed below :—

| Ex. No. | Material(s) used | Operation Involved |
|---------|------------------|--|
| 1 | 2 | 3 |
| 1 | Sheet Metal | Markings, sheet metal cutting by scissors. |
| 2 | Sheet Metal | Marking, sheet metal cutting by scissors. |

| 1 | 2 | 3 |
|----|------------------------------|--|
| 3 | Sheet metal . . . | Marking, sheet metal cutting by scissors. |
| 4 | Sheet metal . . . | Marking, cutting of sheet metal by scissors. |
| 5 | Sheet metal . . . | Marking, cutting of sheet metal by scissors. |
| 6 | Sheet metal . . . | Marking, clock-hour marking, cutting of sheet metal by scissors. |
| 7 | Sheet metal or plywood . . . | Marking, fret saw work or cutting. |
| 8 | Sheet metal or plywood . . . | Marking, fret saw work or cutting. |
| 9 | Sheet metal . . . | Marking, sheet metal cutting. |
| 10 | Plywood . . . | Marking, contour cutting, drilling. |
| 11 | Wood . . . | Marking, cutting, jointing. |
| 12 | Wood . . . | Marking, sawing, jointing. |
| 13 | Wood . . . | Marking, planing, sawing. |
| 14 | M.S. Flat . . . | Marking, hacksawing, filing. |
| 15 | Wood . . . | Marking, planing, jointing, sawing, chiselling. |
| 16 | Wood . . . | Marking, sawing, planing, chiselling. |
| 17 | Wood . . . | Marking, planing, sawing, chiselling, jointing. |
| 18 | M.S. Flat . . . | Marking, filing, drilling, tapping. |
| 19 | Sheet metal . . . | Marking, cutting, drilling, bending. |
| 20 | Sheet metal . . . | Marking, cutting, bending. |
| 21 | Wood . . . | Marking, sawing, planing, fixing together by nails. |
| 22 | Wood . . . | Marking, sawing, drilling, jointing by nails. |
| 23 | Wood . . . | Marking, sawing, planing, chiselling, jointing. |
| 24 | Wood . . . | Marking, cutting, chiselling rough filing, jointing. |

| 1 | 2 | 3 |
|-------------------------------|---|--|
| 25A M.S. Flat | . | Marking, hacksawing, filing, drilling. |
| 25B M.S. Flat | . | Hacksawing, filing, marking, drilling, tapping, counter-sinking. |
| 26 M.S. Round | . | Fixing the job, positioning the tool, turning, starting and stopping the machine. |
| 27 M.S. Round | . | Step turning to calliper accuracy, fixing the job, positioning the tool, turning, starting and stopping the machine. |
| 28 M.S. Round | . | Step turning to calliper accuracy, fixing the job, positioning the tool, turning, starting and stopping the machine. |
| 29 M.S. Round | . | Step turning to calliper accuracy (reverse order), fixing the job, positioning the tool, turning, starting and stopping the machine. |
| 30 Sheet metal | . | Marking, cutting, bending, drilling. |
| 31 Sheet metal | . | Marking, cutting, drilling and bending. |
| 32 Sheet Metal and M.S. Round | . | Roller-making, cutting (Ref. ex. 26), sheet metal—marking, cutting, bending. |
| 33 Sheet metal | . | Marking, hacksawing, filing, drilling. |
| 34 Sheet metal | . | Marking, cutting, filing, rivetting. |
| 35 Sheet metal | . | Marking, cutting, bending, filing, soldering (longitudinal and circumferential). |
| 36 Sheet metal | . | Marking, cutting, soldering. |
| 37 Sheet metal | . | Marking, cutting, soldering. |

3. GENERAL

The provision required in tools and equipment for a batch of 15 students is summarised as under :—

| | |
|------------------------------|--------------|
| Classes V & VI | Rs. 1627/- |
| Classes VII & VIII | Rs. 6404/- |
| Classes IX and X | Rs. 13,045/- |

Precautions have been taken to see that items included in one set of classes do not repeat at the next one. So the set of tools are continuous and complementary *i.e.* the earlier set of tools are needed in the subsequent stages also.

From a review of this it can be seen that by the time the student goes through the 6 years of schooling from classes V to X, he would have been introduced to all the above operations though in a limited way. His interest would have been sufficiently whetted to try and seek new avenues for self-expression based on the fundamental concepts and knowledge he has gained during his periods of work experience in Elementary Workshop Practice.

The enclosed exercises are indicative of the type of exercises that could be set, and it is conceded that within the operations indicated in each exercise a large number of variations and jobs are possible. It is expected that as the scheme advances, these developments will take place and that they will be in the direction of the enlargement and the fulfilment of the main objectives of introducing Elementary Workshop Practice as a work experience.

4. STAFF SOURCES

The products of the Regional Colleges of Education in the technology stream will be well-suited for teaching this activity; in fact the batches that have just come out can be straightway absorbed against this activity, if necessary with a short orientation course at the N.I.E./R.C.E. Also the instructors passing out from the DGET's Central Training Institutions (C.T.Is.) for instructors can be utilised for this activity.

5. LIMITATION

The introduction of theoretical lectures on types of wood/metal, identification of tools, and elementary mechanical drawing

have been deliberately kept out. The student need not be formally introduced to all this knowledge at the high school stage, especially when the practice is only intended as an activity of work experience.

NOTE : Details of exercises mentioned in the above paragraphs have not been included in this note.



COMMENTS ON THE RECOMMENDATIONS OF THE KOTHARI COMMISSION RELATING TO WORK EXPERIENCE

1. *Comments of the Government of Gujarat*

WORK EXPERIENCE (CHAPTERS I & VIII)

General Remarks on the concept of "Work Experience" and its likely impact *vis-a-vis* Basic Education, which upto now has been accepted as a matter of policy at the primary stage, and is also being more and more widely adopted even at the secondary stage as far as the Gujarat State is concerned.

(i) In para 25 of Chapter I, the Commission have defined Work Experience as "participation in productive work in school, in the home, in a workshop, on a farm, in a factory, or in any other productive situation". They go on to say in para. 28 of Chapter I that their concept of "Work Experience" can be described as "a redefinition of Mahatma Gandhi's educational thinking, in terms of a society launched on the road to industrialisation". The Commission hold the view that "Work Experience" is "a method of integrating education with work", (para 27 of Chapter I), and state that in addition to being an effective educational tool, "Work Experience" can serve other important purposes such as rubbing out the distinction between intellectual work and manual work, and removing social stratification based on such distinction. The Commission hope that in this way Work Experience would help social and national integration and create bonds of understanding between educated persons and the masses (para 29). The Commission also say that their concept of manual work is "dynamic and forward looking" and is intended to overcome certain inherent weaknesses of the traditional type of education which tends to perpetuate traditional patterns of behaviour.

(ii) This Government is unable to subscribe to the Commission's views regarding the expected beneficial results of the type of Work Experience advocated by them, since it is clear from a study of other parts of the Report that in practice, a large number of school pupils, particularly in the rural areas, will be required to get the proposed *Work Experience* by spending some

part of their school hours, though being compelled to engage in those very "traditional patterns of behaviour and activity" which the Commission speak of in denigrating terms in para 26 of Chapter I. The Commission have said clearly in para 28 of Chapter I that "Work Experience" is what elsewhere has been called "manual work", and that ideally conceived, it should be obtained in the technological workshop, which the Commission wish to be supplied to as large a number of schools as possible. Now, para 62 of Chapter VII of the Commission's Report makes it clear that rural areas are not likely to get polytechnics, and technical workshops etc., because it would be wasteful to locate them away from the concerned industries. A minute's reflection, therefore, would suffice to show that the "Work Experience" envisaged by the Commission will be available, only through working on the nearest available field or in the traditional "Workshop" of the village cobbler, potter, smith, carpenter, etc. The consequence would be that a pupil will probably be required to undertake as a part of his school work, those very activities which he was performing in his attempts to help his parents in their traditional occupation. Thus in practice, the so called "work experience" advocated by the Commission, will merely tend to compel large numbers of pupils to engage perforce in their hereditary and community occupations. Such a compulsory measure for providing the desired "Work Experience", is likely to be strongly resented, particularly in the rural areas, and perhaps even in the urban areas. This is because the poorer section of our people are bound to regard such compulsory engagement in "work experience", as a subtle attempt to perpetuate their station in life, and thus to prevent them from educating themselves for a different calling or occupation, and perhaps for a different station in life. Here the remarks made by the Commission in para 64 of Chapter XV are also pertinent as they point out there, that today nearly 90% of the enrolment in the existing I.I.Ts. comes from urban areas. Now if the proposed workshops and polytechnics etc. are either located in towns or near some developed industries, there is every chance that mostly the pupils of an urban origin only, will get entry into such institutions, and not the rural pupils.

(iii) This brings me to another aspect of the question of "Work Experience". It is advocated by the Commission, as desirable for those countries which are launched on the road to industrialisation. The question arises whether our country can be said today to be already launched on that road, or whether

we are only indulging in wish fulfilment? Secondly, the activities which should be selected for "Work Experience" ought to be such as would provide the maximum number of pupils with the greatest amount of benefit and which also possess the greatest educational potential or educative value. It must be mentioned that the majority of the activities enumerated in supplementary Note No. 1 at the end of Chapter VIII, do not by any means fulfil these requirements—many of them in fact have been tried out in the past, and discarded as being unsuitable for inclusion in the educational curriculum. It does not appear proper to readopt them. A large number of these activities again, can only be pursued in a well-equipped and organised workshop, and, therefore, they would be automatically ruled out for rural areas, that is to say, for the majority of our schools. Many of them would also involve a great deal of expenditure on contingencies, and must, therefore, be considered as unsuitable for adoption in a poor country like our own, even though they have some educational merit.

(iv) In view of the position outlined above, it appears to this Government that the only suitable alternative which is left open, would be to continue the basic crafts that have stood the test of time in our Basic primary schools, and indeed to introduce them progressively in an ever increasing number of secondary schools as well. In fact, it was for these considerations that the Gujarat State in its draft of the 4th Five-Year Plan, has proposed that the number of post basic schools should be increased from the present 40 or so, to 250 in the next five years. An increase of post basic high schools would be a very considerable progress in our opinion, in providing the right type of "Work Experience" through Basic Education.

(v) A few remarks regarding the targets contemplated by the Commission in para 78 of Chapter VIII of their Report would also be relevant here—the Commission desire that by 1967-68 at least one per cent of all educational institutions at each stage of education, should be covered by their proposed programme of "Work Experience", and go on to say that the coverage should be raised to 20% at the end of the 4th Plan, and 100% at the end of the 5th Plan. They have, however, also said that the schemes may be left flexible and may be modified and improved in the light of experience from year to year. Now in the Gujarat State there are 19600 primary and 1500 secondary schools. Some 5,760 of the primary viz. nearly 27% have already been converted into Basic Schools. As far as secondary schools are concerned, we have nearly 170 Multipurpose High Schools where some sort

of "Work Experience" is a part of the curriculum. In addition, either wood work or some type of hand work is also compulsory in a large number of secondary schools even though they cannot be said to be practising Basic Education or undertaking any systematic schemes of "Work Experience". When, however, a further 250 of the secondary schools are converted into Post Basic Schools, or even if that number of new Post Basic Schools are opened during the next Plan, we shall have some 420 out of a total of about 2,000 schools which will be given systematic Post Basic Education in addition to the Multipurpose High Schools. Thus, the targets set by the Commission will have been more than met in the Gujarat State both at the stage of primary education as well as at the stage of secondary education within five years.

(vi) In the light of the facts detailed above it does not appear necessary for the Gujarat State to adopt the programme of "Work Experience" of the kind which has been recommended by the Commission since alternative and more satisfactory means are already in existence in our State for providing "Work Experience", through Basic Education at the primary stage and through Post Basic Education at the secondary stage.

(vii) It might be interesting to know that some sort of technical education has already been introduced at the secondary stage in an experimental manner at the Post Basic High School at Ambia in Saurashtra, where the preparation of tools etc. needed by a rural community has been introduced as a part of the curriculum.

(viii) Our study of the extracts sent with your letter under reply, as well as a study of the different Chapters concerning Vocationalisation of Education etc. have led us inevitably to conclude, that the thinking of the Education Commission in the matter of "Work Experience" is not so realistic and clear-cut as might have been expected. You will, therefore, forgive me when I say, that this Government sees no reason to modify its proposals for opening more Post Basic Schools during the next Five Year Plan, or for giving up the system of Basic Education either at the primary or at any other stage. In fact, it is our firm view that Basic Education according to Gandhiji's idea is a system to be preferred, to the vague type of "Work Experience" that has been discussed in the extracts under consideration. This is because the educational potentialities of Basic Education are much greater than those of mere "manual work" that is to say of the "Work Experience" of the limited kind envisaged by the Commission.

2. COMMENTS OF THE GOVERNMENT OF UTTAR PRADESH

While we appreciate the value of "Work Experience" and "Social Service" and are in general sympathy with the Commission's recommendations, it is felt that there are severe limitations, both of resources and human nature, in making work experience and social service obligatory on a large scale in any meaningful sense. It is, therefore, suggested that they should not be compulsory either at the school or at the college level. We, however, agree that a beginning should be made in selected schools which should be progressively increased consistent with the training of teachers and provision of necessary facilities including supply of equipment. It may be added that so far as this State is concerned, all our Senior Basic Schools (Class VI-VIII) have provision for agriculture or some other craft. At the Higher Secondary stage, 925 out of 2436 High Schools and 313 Intermediate Colleges out of 1245 Intermediate Colleges have provision of some craft under the Constructive Group (wood craft, book craft, metal work, spinning and weaving, tailoring, leather work, laundry, dyeing and printing etc.) What is really needed is the change in attitudes and values which is a much more complex matter.

3. RECOMMENDATIONS MADE BY THE 7TH NATIONAL SEMINAR ON ELEMENTARY EDUCATION HELD IN MAHARASHTRA

(i) The Seminar agreed to the introduction of work experience in schools and felt that work experience has to be geared to the industries and crafts available in the neighbourhood of the school. Agriculture being a major occupation of the country, most of the work experience will have to be woven round the various operations involved in this. At lower primary stage it should include clay modelling, candle making, chalk making, mat making, coir making, bamboo work etc. and at the higher primary stage these activities should be carried forward and spinning and weaving may also be included.

(ii) All the trainees in the training institutes and officers in the Department of Education should be acquainted with the concept of work experience thoroughly.

(iii) To make the scheme successful the schools should be provided with equipment and contingencies on a liberal scale.

4. RECOMMENDATIONS OF THE NAI TALIM CONVENTION, KUNDRESHWAR

The Convention welcomes the introduction of work-experience as an integral part of education at all stages. Properly

organised, this programme should lead to revitalisation of our education system and bring in revolutionary changes in its structure and purpose.

The introduction of work-experience in the college and secondary school stage is a most welcome proposal not only because it is the extension of the most important principle of Basic Education applied to the stages of higher education but also because this programme would bring education close to realities. are many and success depends upon how the general atmosphere. The problems accompanying the introduction of work experience of the country is created, financial resources made available, preparation of teachers ensured, and to the extent work experience is related to actual social needs. It is important to examine this entire concept of work experience carefully and spell it out in detail in order that energies and resources are not scattered wastefully resulting in more frustration and disappointment. It should be clearly recognised that work experience is, in essence, socially useful and a productive activity leading to progressive self-reliance and fully integrated with the education and enrichment of the personality of the student.

There has been acquired in the last three decades a good deal of intensive experience in the introduction of work experience at the school stage through Basic Education. This experience and the lessons learnt from this should be used to build up further norms of activity and experience. It would be unwise and imprudent to discard this experience and start afresh. Work experience to be worthwhile should be educationally complete, socially useful and functionally continuous. The right selection of activities and craft, and providing adequate time for the development of skills and completion of units of activity is important for the proper introduction of work experience. In addition, the usefulness of work experience depends on the extent to which these activities are related to the education of the child. The various statements in the Education Commission Report leave one vague as to the objectives and programmes of work experience. The time allotment indicated in the Report can only raise misgivings regarding the seriousness of the proposals. It is necessary, therefore, to clarify the concept at school stage along lines tried out in Basic Education, and relate it at the same time to community needs, useful production and integrated education. The need of the day is to strengthen and stabilise this programme and lay proper foundations in the school stage.

COPY OF LETTER NO. SI(SC. 2) 1991/67, DATED 18-4-1967 RECEIVED FROM THE DIRECTOR OF PUBLIC INSTRUCTION, REGARDING THE SCHEME: TOOLS PROGRAMME, FORMULATED BY SHRI K. C. CHACKO, PRINCIPAL, COLLEGE OF ENGINEERING, TRIVANDRUM.

The purpose of the scheme 'Tools Programme' was to provide opportunities to children of lower and upper primary standards to get experience in handling tools which we have to use in our daily life. Children in countries which are advanced in technology have ample facilities at their homes to have practice in the use of such tools; but such facilities are not available for children of our country especially in rural areas. This scheme was an attempt to give children in the primary stage as much knowledge as possible in this regard through posters, illustrations and practical work.

The scheme was introduced in some primary schools of this State. The tool-sets supplied to these schools consists of 49 items in a box. (List of tools is appended). The scheme was discontinued as it did not make the necessary impact.

The only material now available with us regarding the scheme is a book containing diagrams of tools compiled by Shri K. C. Chacko, Principal, College of Engineering, Trivandrum. The book contains diagrams showing the use of about 65 tools. A copy of the book is sent herewith.

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List of articles (Tools etc.) supplied to schools in 1960.

| Sl. No. | Name of article | Quantity |
|---------|--|--------------|
| 1 | 2 | 3 |
| 1 | Double headed spanner $\frac{1}{2}$ " \times 5" | 1 |
| 2 | Double headed spanner $\frac{3}{8}$ " \times 4" | 1 |
| 3 | Pencil cutter | 1 |
| 4 | Pencil screw | 1 |
| 5 | Glass ink filler | 1 |
| 6 | Flat file 8" | 1 |
| 7 | File 6" | 1 |
| 8 | Table lock | 1 |
| 9 | Ball pane hammer | 1 |
| 10 | Screw driver 8" | 1 |
| 11 | Screw driver 8" flat | 1 |
| 12 | Screw driver 6" | 1 |
| 13 | Screw driver 4" | 1 |
| 14 | Cutting pliers 6" | 1 |
| 15 | Foot ball pump | 1 |
| 16 | Brass lock | 1 |
| 17 | Parliamentary hinge | 1 |
| 18 | Iron screws $\frac{1}{2}$ " and $\frac{3}{4}$ " | 2 dozen each |
| 19 | Hand saw 12" | 1 |
| 20 | Tenon saw 12" | 1 |
| 21 | Bodlin | 1 |
| 22 | Brass scale set 3" scale pan 9" arm with chain and weight from 1/8 lb to 1 lb. | 1 set |
| 23 | Stapler | 1 |
| 24 | Tin cutter with cork screw | 1 |
| 25 | Flit sprayer | 1 |
| 26 | Drill (screw type) | 1 |
| 27 | Measuring tape cotton | 1 |

| | | | | | | |
|----|--------------------------------------|---|---|---|---|--------|
| 28 | Masons' trowel 4' | . | . | . | . | 1 |
| 29 | Masons' trowel 2' | . | . | . | . | 1 |
| 30 | Masons' pointing | . | . | . | . | 1 |
| 31 | Cycle pump—hand type with connection | . | . | . | . | 1 |
| 32 | Brass screws 3" & 1" | . | . | . | . | 2 doz. |
| 33 | Shuttle (wooden roller) | . | . | . | . | 1 |
| 34 | Carpenter's mallet | . | . | . | . | 1 |



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